

FINAL BASELINE HUMAN HEALTH
RISK ASSESSMENT
HORSESHOE ROAD COMPLEX SITE
REMEDIAL INVESTIGATION/FEASIBILITY STUDY
SAYREVILLE, NEW JERSEY
Volume I
Work Assignment No.: 013-RICO-02BT

Remedial Response, Enforcement Oversight and Non-time Critical Removal Activities at Sites of Release or Threatened Release of Hazardous Substances in EPA Region II

CDM Federal Programs Corporation

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FINAL BASELINE HUMAN HEALTH RISK ASSESSMENT HORSESHOE ROAD COMPLEX SITE REMEDIAL INVESTIGATION/FEASIBILITY STUDY SAYREVILLE, NEW JERSEY Volume I

Work Assignment No.: 013-RICO-02BT

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ACRONYMS AND ABBREVIATIONS

ABS - Dermal Absorption Factor

ADC - Atlantic Development Corporation
AF - Soil-to-Skin Adherence Factor

AOC - Area of Concern

ARARs - Applicable or Relevant and Appropriate Requirements

ARC - Atlantic Resource Corporation

ARCS - Alternative Remedial Contracting Strategy

AT - Averaging Time

BOD - Biological Oxygen Demand

BW - Body Weight

CDI - Chronic Daily Intake

CDM Federal - CDM Federal Programs Corporation

CERCLA - Comprehensive Environmental Response, Compensation,

and Liability Act

CF - Conversion Factor COC - Chemical of Concern

COD - Chemical Oxygen Demand

CT - Central Tendency

DNAPL - Dense Nonaqueous Phase Liquid

DSM - Downstream Marsh
ED - Exposure Duration
EF - Exposure Frequency

EPA - United States Environmental Protection Agency

ERA - Ecological Risk Assessment

FI - Exposure Time
FI - Fraction Ingested
FS - Feasibility Study

HEAST - Health Effects Assessment Summary Tables

HHRA - Human Health Risk Assessment
HRDD - Horseshoe Road Drum Dump
IR - Ingestion Rate; Inhalation Rate
IRIS - Integrated Risk Information System
LNAPL - Light Nonaqeous Phase Liquid

LOAEL - Lowest-Observed-Adverse-Effect-Level

MCL - Maximum Contaminant Level

MCUA - Middlesex County Utilities Authority

NCEA - National Center for Environmental Assessment
NCP - National Oil and Hazardous Substance Pollution

Contingency Plan (NCP)

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No Observed Adverse Effect Level NOAEL NJDEP New Jersey Department of Environmental Protection **NPL** National Priorities List **PAH** Polycyclic Aromatic Hydrocarbon PAR Pathway Analysis Report PC Permeability Constant **PCB** Polychlorinated Biphenyl **PRP** Potentially Responsible Party **PRG** Preliminary Remediation Goal RA Risk Assessment **RAGS** Risk Assessment Guidance for Superfund Reference Concentration **RFC RFD** Reference Dose Remedial Investigation RI Reasonable Maximum Exposure **RME** RR Raritan River SA Skin Surface Area SF Slope Factors **SPD** Sayreville Pesticide Dump SQL Sample Quantitation Limit SSC Suspended Soil Concentration **SVOC** Semi-volatile Organic Compound TAL Target Analyte List TCL Target Compound List **TCLP** Toxicity Characteristic Leaching Procedure TDS Total Dissolved Solids **TKN** Total Kjeldahl Nitrogen TOC Total Organic Carbon TSS Total Suspended Solids **UCL** Upper Confidence Limit

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VOC

Volatile Organic Compound

1.0 INTRODUCTION

CDM FEDERAL PROGRAMS CORPORATION (CDM Federal) received Work Assignment Number 085-2C0BT under the ARCS II program to perform a Remedial Investigation/Feasibility Study (RI/FS), including a Risk Assessment (RA) for the United Stated Environmental Protection Agency, Region II (EPA) at the Horseshoe Road Complex Superfund site located in Sayreville, New Jersey. The purpose of the RI/FS is to evaluate the overall nature and extent of contamination at the site and to develop and evaluate remedial alternatives, as appropriate. The purpose of the RA is to provide an analysis of baseline risks to determine the need for remedial action at the site and to serve as a basis for determining cleanup levels which will adequately protect human health and the environment. Both a baseline human health risk assessment (HHRA) and an ecological risk assessment (ERA) will be completed.

1.1 SCOPE OF RISK ASSESSMENT

Task 5.5.2 of the Final Work Plan (dated June 1997) required the preparation and submittal to EPA of a Human Health Risk Assessment (HHRA). CDM submitted a Pathway Analysis Report (PAR) to EPA in July 1998. The PAR specified the conceptual approach that would be used to evaluate the potential human health risks associated with the site. The following are the components of the HHRA as specified in the work plan:

- Data Collection and Evaluation
- Exposure Assessment
- Toxicity Assessment
- Risk Characterization
- Uncertainties in risk assessment
- Preliminary remediation goals (PRGs)

DATA COLLECTION AND EVALUATION

The first step of the Risk Assessment, Data Collection and Evaluation, is Section 2.0 of this report. This section includes a summary of site sample data collected as part of CDM's RI (Appendix A). Subsets of the chemicals of concern (COCs) identified in each environmental matrix (i.e., soil, sediment, surface water, and building materials) and Area of Concern (AOC) were selected for detailed analysis. The primary selection criteria for these chemicals included 1) the chemical concentrations in various media; 2) a chemical concentration-toxicity screen (Appendix B); 3) the frequencies of detection; 4) the physical/chemical parameters; 5) the degree of toxicity, mobility, and persistence in the environment; and 6) historical information about site activities and the chemicals reliably associated with these activities. Media- and AOC-specific COCs are presented in Appendix C.

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EXPOSURE ASSESSMENT

In the second step, Exposure Assessment, qualitative or quantitative estimates of the magnitude, frequency, duration, and routes of exposure were made. Numerous pathways through which chemical contaminants could possibly migrate from potential sources to existing receptors were identified. Receptor groups (i.e., human populations) that might potentially be exposed as a result of the presence of one or more chemicals in the environment were also identified. Typically, these receptor populations include persons who might be exposed via ingestion of, dermal contact with, or inhalation of a contaminated medium, such as surface soil. Receptors who might be exposed under present or potential future land or water use scenarios were evaluated, as appropriate.

Exposure point concentrations for COCs were estimated based on the 95 percent Upper Confidence Limit (UCL) on the arithmetic mean (Appendix D). However, if the maximum detected concentration for a chemical was lower than the 95 percent UCL concentration, the actual maximum detected concentration was utilized in the estimation of chemical intakes. In such cases, the maximum detected concentration was used to prevent potential overestimation of potential human health impacts.

Daily chemical intakes via ingestion, dermal contact, or inhalation routes were quantitatively evaluated based on the 95 percent UCL estimate and site-specific, medium-specific, and receptor-specific intake variables. Chronic daily intakes were estimated in the Risk Assessment depending on the specific receptor population being evaluated. As previously stated, exposures were estimated for the reasonable maximum case exposure scenario (RME), which employs the 95 percent UCL (exposure point) concentration and RME assumptions. It should be noted that the Risk Assessment assumes that no reduction in exposure concentrations occurs due to natural physical/chemical processes, site remediation or institutional controls. The results of this evaluation are provided in the Exposure Assessment (Section 3.0) of the Risk Assessment.

TOXICITY ASSESSMENT

The third step of the Risk Assessment is the Toxicity Assessment. The purpose of the toxicity assessment was to weigh available toxicological evidence regarding the potential for a particular chemical contaminant to cause adverse health effects in exposed individuals and to provide, where possible, an estimate of the relationship between the extent of exposure to a chemical contaminant and the increased likelihood and/or severity of adverse health effects (EPA, 1989a).

EPA has performed the toxicity assessment step for numerous chemicals and has made available the resulting toxicity information and toxicity values, which have undergone extensive peer review; however, data analysis and interpretation are still required. These established toxicity values were obtained from the Integrated Risk Information System (IRIS) data base (November 1998), which is updated monthly, or from the Health Effects Assessment Summary Tables (HEAST) FY 1997 - Annual, if no value was found in IRIS. The Superfund National Center for Environmental

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Assessment (NCEA) was consulted for other specific chemical toxicity values, as directed by HEAST, when no value was shown.

A toxicity profile for each COC was developed using EPA toxicity assessments and accompanying values (Appendix E). When toxicity values were not available for a specific chemical, the chemical was qualitatively discussed. The toxicity values and the limitations of use of the toxicity values have been described in the Toxicity Assessment (Section 4.0) of the Risk Assessment.

RISK CHARACTERIZATION

In the last step of the Risk Assessment process, Risk Characterization, the chronic daily intake for each chemical to which a given receptor group might be exposed is multiplied by the cancer slope factor to estimate potential risk since only the hazard index is calculated by a comparison. Quantitative estimates of the carcinogenic risks and noncarcinogenic health effects associated with each exposure pathway are presented for current and potential future land uses of the site.

The risks resulting from exposures to carcinogens were estimated based on the following assumptions (EPA, 1989a):

- A linear relationship exists between the intake of a carcinogenic substance over a lifetime and the risk of cancer (the linearized multistage model of carcinogenesis assumes that the dose-response relationship will be linear in the low-dose portion of the multistage model dose-response curve).
- Cancer risks from exposures to all carcinogens via all intake routes are additive.

The potential for noncarcinogenic effects was evaluated by comparing an exposure level over a specified time period with a reference dose derived for a similar exposure period. Section 5.0 of this Risk Assessment presents the Risk Characterization. Spreadsheet calculations are presented in Standard Tables 7 and 8 of this report.

UNCERTAINTIES IN RISK ASSESSMENT

Because of the number of assumptions required during the Risk Assessment process, some degree of uncertainty is inevitably associated with the risk and hazard estimates. These uncertainties have been addressed both qualitatively and quantitatively (i.e., central tendency calculations) in Section 6.0, Uncertainties in Risk Assessment. Central tendency calculations are presented in Tables 7 and 8 of this report.

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PRELIMINARY REMEDIATION GOALS

Risk-based preliminary remediation goals (PRGs) are initial concentration goals for individual chemicals for specific medium and land use combinations. Whether PRGs are required for a site depends on the calculated site risk and hazard estimates, the existence of Applicable or Relevant and Appropriate Requirements (ARARs), and the existence of superseding EPA guidance on action levels. Generally, if risk and hazard estimates do not exceed the EPA target risk range of 10⁻⁴ to 10⁻⁶ for carcinogens or one for noncarcinogens, and PRGs are clearly defined by ARARs, PRGs need not be calculated for the Site. In addition, EPA may use it's discretion to estimate PRGs were risks are between 1.0E-04 to 1.0E-6. PRGs for this Site are presented in Appendix F and discussed in Section 7.0 of the Risk Assessment.

SUMMARY

A summary of the results of the Risk Assessment is presented in Section 8.0 of this report.

REFERENCES

The PAR and HHRA were prepared in accordance with EPA Region II and other EPA risk assessment guidance documents and the on-line data base listed below.

- Risk Assessment Guidance for Superfund: Human Health Evaluation Manual, Part A (EPA, 1989a).
- Risk Assessment Guidance for Superfund: Human Health Evaluation Manual, Part D (EPA, 1998a).
- Exposure Factors Handbook (EPA, 1997a).
- Human Health Evaluation Manual, Supplemental Guidance: Standard Default Exposure Factors (EPA, 1991a).
- Guidance for Data Useability in Risk Assessment (EPA, 1992a).
- Dermal Exposure Assessment: Principles and Applications (EPA, 1992b).
- Health Effects Assessment Summary Tables FY-1997 Annual (EPA, 1997b).
- Integrated Risk Information System (On-line data base of toxicity measures) (EPA, 1998b).

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1.2 SITE DESCRIPTION AND HISTORY

The Horseshoe Road Complex Site is located in Sayreville (Lots 1.01 and 1.03 in Block 246 and Lots 2.02 through 2.04 in Block 256), Middlesex County, New Jersey (Figure 1). The abandoned site (Figure 2), situated near the Raritan River, includes three adjoining areas of concern: (1) the Horseshoe Road Drum Dump (HRDD); (2) the Atlantic Development Corporation (ADC) Area; and (3) the Sayreville Pesticide Dump (SPD). The Atlantic Resource Corporation (ARC) is also located in the complex, but it is not part of the National Priorities List (NPL) site. The site, which consists of several abandoned industrial buildings and warehouses, is bordered to the north by the Raritan River, to the east by Conrail railroad tracks and easement, and to the west and south by wooded areas.

The area surrounding the site is used for both residential and industrial purposes. At least 47 residences are located within an one-mile radius of the site, while several hundred single family and multi-resident buildings are located within a two-mile radius. New Jersey Steel Corporation operates a facility approximately one-half mile to the southwest. The Middlesex County Utilities Authority (MCUA) operates a water treatment plant on the northern side of the site and a MCUA trunk line and a maintenance right of way cuts through the ARC and ADC properties. The Sayreville Water Company, which supplies water to approximately 14,000 people, maintains wells, recharge lagoons, and force mains several miles south of the site on Borden town Road.

For over 30 years, various operations were conducted at the Horseshoe Road Complex including the manufacturing of epoxy resins, roofing materials, paint pigments, and pharmaceuticals. Poor waste handling practices and the dumping of waste materials resulted in site-wide contamination. In addition, releases of copper, lead, methoxychlor, lindane, phenol, bis(2-ethylhexyl)phthalate, chloroform, 1,2-dichloroethane, and mercury to the Raritan River have also been reported.

Investigations by EPA and the New Jersey Department of Environmental Protection (NJDEP) have documented contamination of the site's surface and subsurface soil, surface water and sediment, and groundwater. Elevated levels of volatile organic, semivolatile organic, pesticide, dioxin, polychlorinated biphenyls (PCBs), and inorganic contamination have been detected in the site media.

To date, EPA has conducted more than nine removal actions that have addressed immediate public health threats and that have restricted site access. Removal actions, which began in 1987, included the removal of 3,000 drums, both buried and located on the ground surface, the remediation of mercury and dioxin spills, the removal and disposal of tank and vat materials, and the excavation and disposal of contaminated soils and debris.

The site was proposed for inclusion on the EPA Superfund NPL in June 1993 and was listed in September 1995.

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2.0 DATA COLLECTION AND EVALUATION

In the first step of the HHRA, Hazard Identification, the samples collected and the chemicals analyzed for, by medium, are discussed. The HHRA includes a summary of the locations sampled in the RI, the number of samples collected, and the analyses conducted on the samples from each media. As part of the RI, samples were collected from one stratigraphic boring sample, 12 surface soil samples, 187 soil boring samples, 15 DNAPL soil samples and one DNAPL groundwater sample, and 38 test pit samples; two rounds of groundwater samples (19 monitoring wells and 40 samples); one supplementary groundwater sampling round from seven newly installed wells (eight samples); nine groundwater screening samples from eight LNAPL/groundwater screening borings; one round of surface water samples from 27 locations (29 samples); one round of sediment samples from 39 locations (42 samples); 45 samples of building flooring and underlying soils; and 11 building material and building dust samples. Sample locations are presented in Figure 3 (surface soil, soil boring, DNAPL borings, LNAPL and groundwater screening borings, building flooring, test pits, and shallow monitoring wells), and Figure 4 (surface water, sediment, and building material).

2.1 MEDIA TO BE EVALUATED

The environmental media to be quantitatively evaluated in the HHRA include surface soil, subsurface soil, groundwater, surface water, sediment, and building materials. Air is discussed qualitatively in the HHRA. The following is a summary of specific data sets for each medium to be used in the evaluation of present and potential future human health risks.

2.1.1 **SOIL**

Surface Soil

In October 1997, surface soil samples were collected at eleven locations at the site. The samples included two background samples (SS01 and SS02), four samples (SS03 through SS06, and SS20 (duplicate of SS03)) from ADC, and six samples (SS07 through SS11) from ARC. All of the surface soil samples were analyzed for Target Compound List (TCL) VOCs, TCL Extractables, and Target Analyte List (TAL) Metals, Toxicity Characteristic Leaching Procedure (TCLP) - TC VOCs, - TC Extractables, - TC Inorganics. In addition, 8 of 11 samples were also analyzed for hexavalent chromium, dioxin, total organic carbon (TOC), pH, and grain size. Two aqueous field blanks were collected with the surface soil samples. The field blank samples were analyzed for TCL VOCs, TCL Extractables, TAL Inorganics, hexavalent chromium, and dioxin.

Surface soil samples were also collected from the shallow depth (0 to 1 foot) of soil borings. Seven samples were collected from HRDD, 14 from ADC, 15 from SPD, and 13 from ARC.

Summaries of the surface soil data collected from each AOC are presented in Appendix A.

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Subsurface Soil

In November and December 1997, soil borings were conducted at 49 locations at the site. Seventeen borings were installed in SPD. Fifteen (15) borings were installed in ADC. Six borings were installed in HRDD. Twelve borings were installed in ARC. Please note that soil boring SB-22 was counted in both ARC and HRDD. Multiple samples (3 to 5) were collected from each boring. Samples were typically collected at a shallow depth (0 to 1 foot), intermediary depths (one to three samples) ranging from 2 to 24 feet, and a deep depth (28 to 30 feet or 32 to 34 feet). A total of 187 soil boring samples were collected, including eleven duplicate samples. CDM Federal also collected one sample (2 to 4 feet below ground surface) from the stratigraphic boring STB-2.

Each soil boring sample, including the stratigraphic boring sample, was analyzed for TCL VOCs, TCL Extractables, and TAL Inorganics. Twenty-eight selected samples were analyzed for additional analytes, including TCLP-TC VOCs, -TC Extractables, and -TC Metals, hexavalent chromium, TOC, pH, and grain size. In addition, 17 aqueous field blank samples were collected. Field blank samples were analyzed for TCL VOCs, TCL Extractables, TAL Inorganics, and hexavalent chromium, when applicable.

Summaries of the subsurface soil data collected from each AOC are presented in Appendix A.

Test Pits

Test pits were excavated at twelve locations at the site in January 1998. Six test pits were excavated in SPD. Six test pits were excavated in HRDD. Two to seven samples were collected from each test pit. A total of 38 test pit samples were collected, including 34 soil samples, 2 aqueous samples, and 2 soil duplicate samples. Each test pit soil sample was analyzed for TCL VOCs, TCL Extractables, and TAL Inorganics. One of the aqueous samples was analyzed by Method 8321A and HPCL, and the second aqueous sample was analyzed as a corrosive liquid. Seven aqueous field blank samples were collected and analyzed for TCL VOCs, TCL Extractables, and TAL Inorganics.

Summaries of the test pit soil data collected from each AOC are presented in Appendix A.

2.1.2 GROUND WATER

Two rounds of groundwater sampling of 19 monitoring wells were conducted at the site. The sampling rounds occurred in February 1998 and March 1998. After a review of the initial data, CDM Federal installed seven additional monitoring wells. These seven wells were sampled in June 1998. Five wells are located at SPD, including two background wells. Seven wells are located at ADC. Eight wells are located at ARC. Four wells are located at HRDD. Several monitoring wells monitor more than one AOC, therefore, these wells are counted more than once.

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Samples were also collected, during the February sampling round, from the four MCUA wells that are adjacent to the site's northern boundary. Twenty groundwater samples were collected during each round, including one duplicate sample, during the first two sampling rounds. Eight groundwater samples, including one duplicate, were collected during the supplemental sampling round.

All groundwater samples were analyzed for low concentration VOCs, TCL Extractables, TAL Inorganics, nitrate/nitrite, ammonia, total Kjeldahl nitrogen (TKN), biological oxygen demand (BOD), chemical oxygen demand (COD), TOC, total dissolved solids (TDS), total suspended solids (TSS), alkalinity, methane, ethane, ethene, sulfate, chloride, and iron (Fe⁺²). In the February and March sampling rounds, ten blanks were collected. In the supplemental sampling round, seven blanks were collected, including one method, three field, and three trip blanks.

Summaries of the groundwater data collected from each AOC are presented in Appendix A.

LNAPL Borings / Groundwater Screening Points

A total of eight LNAPL Borings / Groundwater Screening Points were installed to screen the water table to identify floating product in the vicinity of identified potential source area. Five screening points were located in ADC, three were in SPD, and one was located in ARC. Several locations are part of more than one AOC and, therefore, the sample numbers are counted twice. One groundwater sample was collected from each groundwater screening point. A total of nine samples, including one duplicate, were collected. Samples were analyzed for TCL VOCs and TCL SVOCs. One aqueous field blank sample was collected and analyzed for TCL VOCs and TCL SVOCs. One trip blank was analyzed for TCL VOCs.

2.1.3 SURFACE WATER

Surface water samples were collected from 27 locations in October 1997. Three surface water locations were in SPD, twelve in ADC, eight in ARC, two in HRDD, three from locations along the Raritan River, and one in the Downstream Marsh (DSM). Several locations are part of more than one area of concern and, therefore, the sample numbers are counted twice. Thirty surface water samples were collected, including three background and three duplicate samples. Each surface water sample was analyzed for TCL VOCs, TCL Extractables, TAL Inorganics, TDS, alkalinity, and hardness. Nine samples were also analyzed for hexavalent chromium. Six trip blank samples were also collected and analyzed for TCL VOCs.

Summaries of the surface water data collected from each AOC are presented in Appendix A.

2.1.4 SEDIMENT

Sediment samples were collected at the same 27 locations as surface water samples. Twelve

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additional sediment samples were collected at ADC (3), DSM (2), HRDD (4), and ARC (1), and Raritan River (3). Several locations are part of more than one area of concern and, therefore, the sample numbers are counted twice. Two duplicate sediment samples and six aqueous field blank samples were also collected. Sediment samples were analyzed for TCL VOCs, TCL Extractables, TAL Metals, pH, TOC, and grain size. Thirteen sediment samples were also analyzed for hexavalent chromium and dioxin. Field blank samples were analyzed for TCL VOCs, TCL Extractables, TAL Inorganics, hexavalent chromium, and dioxin.

Summaries of the sediment data collected from each AOC are presented in Appendix A.

2.1.5 BUILDING MATERIALS

Building Flooring

Building flooring samples were collected at 13 locations in November 1997 and January 1998. Seven of these locations are in the ADC and six are in the ARC. At each location, a sample of the concrete floor and two or three samples of the soil under the floor were collected. Soil samples were collected up to 6 to 8 feet below ground surface. A total of 45 samples were collected, including six duplicate samples. Floor and soil samples were analyzed for TCL VOCs, TCL Extractables, TAL Inorganics. Floor samples were also analyzed for TCLP - TC VOCs, - TC Extractables, - TC Inorganics, corrosivity, reactivity, and ignitability. Five aqueous field blank samples were collected and analyzed for TCL VOCs, TCL Extractables, and TAL Inorganics.

Building Material and Building Dust

Building material and dust samples were collected in October 1997. Six locations were in ARC and four locations were in ADC. Eleven samples, including one duplicate, were collected and analyzed for TCL VOCs, TCL Extractables, TAL Inorganics, TCLP- TC VOC, - TC Extractables, - TC Inorganics, corrosivity, reactivity, ignitability, dioxin, and hexavalent chromium. Two aqueous field blank samples were collected and analyzed for TCL VOCs, TCL Extractables, TAL Inorganics, dioxin, and hexavalent chromium.

Summaries of the building floor and subsurface soil, and building material and dust data collected from each AOC are presented in Appendix A.

2.2 TREATMENT OF DATA

Summaries of the data from each environmental media by AOC are presented in Appendix A. The tables include the frequency of detection, the range of detected concentrations, the location of the maximum detected concentration, and the range of non-detect concentrations for each detected chemical. The frequency of detection is reported as the number of samples with detected concentrations divided by the number of analyzed samples. For the purposes of these tables when

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evaluating duplicate results, the sample result and duplicate result are counted as individual samples.

Blanks, including field, trip, and laboratory, and rejected data (i.e., qualified with "R") were not be included in the frequency tally or range of concentrations.

2.2.1 DATA QUALITY

As part of the data evaluation process, the quality of data was evaluated in the data validation phase. All RI data were validated in accordance with EPA Region II data validation protocols. However, it should be noted that the data from certain samples and analytes were qualified. In general, data with qualifiers that indicate uncertainties in concentrations but not identity were utilized in this Risk Assessment. Rejected data, qualified with an "R", will not used in this Risk Assessment because the chemical's identity and concentration are uncertain. Data qualified with a "U" were used in this Risk Assessment, as appropriate, in producing data summary tables and in calculating 95 percent UCLs (as one-half the method detection limit).

The data qualifiers associated with the site's database are as follows:

- The "*" qualifier indicates for inorganics that duplicate analysis was not within control limits.
- The "J" qualifier indicates for all chemicals that the reported concentration is estimated.
- The "B" qualifier indicates for organics that the reported concentration is estimated because it was detected in both the sample and in the associated blank; for inorganics, the "B" qualifier indicates that the reported value is less than the contract required detection limit but greater than the instrument detection limit.
- The "E" qualifier indicates for organics that the concentration exceeds the calibration range of the gas chromatograph/mass spectrometry (GC/MS) instrument; for inorganics, the "E" qualifier indicates that the value is estimated due to matrix interferences.
- The "N" qualifier for organics indicates that there is only presumptive evidence for their presence; for inorganics, the "N" qualifier indicates that the spiked sample recovery is not within control limits.
- The "D" qualifier for organics indicates that the chemical was identified in an analysis at a secondary dilution factor.
- The "U" qualifier for all chemicals indicates that the chemical was not detected at the reported detection limit.

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2.3 CRITERIA FOR THE SELECTION OF CHEMICALS OF POTENTIAL CONCERN

Because of the large number of chemicals detected at the site, those retained for quantitative analysis in this HHRA were selected as the most significant (i.e., greatest contributors to risks/hazards). A subset of the chemicals identified in each environmental matrix (i.e., surface soil, subsurface soil, sediment, surface water, and building/dust materials) and AOC were selected for detailed analysis. The primary selection criteria for these chemicals included 1) the chemical concentrations in various media; 2) a chemical concentration-toxicity screen; 3) the frequencies of detection; 4) the physical/chemical parameters; 5) the degree of toxicity, mobility, and persistence in the environment; and 6) historical information about site activities and the chemicals reliably associated with these activities.

The potential health impact of a chemical is influenced by the relationship of concentration and toxicity. A chemical detected at high concentrations that may exhibit low noncarcinogenic toxicity may have less impact on human health than a potential carcinogen detected at relatively low concentrations. Therefore, a chemical concentration - toxicity screening procedure was performed for all chemicals detected in the specific AOCs for surface soil, subsurface soil, surface water, sediment, and building materials to aid in the determination of which chemicals were likely to contribute significantly to potential risks and hazards (Appendix B).

Individual chemical scores (or risk factors) were calculated for each medium and AOC as follows:

$$R_{ij} = (C_{ij}) (T_{ij})$$

Where:

 R_{ij} = risk factor for chemical I in medium j C_{ij} = concentration of chemical I in medium j T_{ij} = toxicity value for chemical I in medium j (i.e., slope factor or 1/oral reference dose)

For conservatism, the maximum detected concentration of each chemical was used in the calculation (EPA, 1989a). For the purposes of these tables when evaluating duplicate results, the sample result and duplicate result are considered as individual concentrations. The chemical-specific risk factors per area were summed to obtain a total risk factor for all chemicals for each area. Separate total risk factors were calculated for carcinogens (using the appropriate slope factors) and noncarcinogens (using the appropriate oral reference doses). The ratio of the risk factor for each chemical in each area in a medium to the total risk factor for each area in a medium provided the relative contribution from each chemical in each area in a medium. A contribution of 1 percent was used as a lower limit and chemicals contributing at least 1 percent were selected as COCs (EPA, 1989a).

For the evaluation of chromium in the concentration-toxicity screens, total chromium was speciated into its +3 and +6 valence states using a ratio of 6:1, respectively, per the IRIS data base. However, HHRA.DOC

actual site data indicates the hexavalent chromium was not detected at the site. Therefore, all chromium is assumed to be in the +3 valence state.

No toxicity values (e.g., reference dose/cancer slope factor) for lead are currently available from EPA sources. However, the lead concentrations present in surficial soil were compared to EPA recommended lead screening levels of 400 ppm for residential settings and a range of 750 to 1750 ppm for commercial/industrial land uses.

The selected chemicals of concern (COCs) are presented in Appendix C.

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3.0 EXPOSURE ASSESSMENT

The objective of this section is to present the analysis for selecting potential exposure pathways to be evaluated in the HHRA. An exposure pathway analysis describes the transport of a chemical from the source of release to the exposed individual. An exposure pathway links the sources, locations, and types of environmental patterns to determine significant pathways of human exposure. As defined in EPA's Risk Assessment Guidance for Superfund (RAGS), an exposure pathway has four elements:

- Source and mechanism of chemical release
- Release or transport mechanism
- Point of potential human contact (exposure point)
- Exposure route at the contact point

Numerous pathways through which chemical contaminants could possibly migrate from potential sources to existing receptors were identified. Receptor groups (i.e., human populations) that might potentially be exposed as a result of the presence of one or more chemicals in the environment were identified. Typically, these receptor populations include persons who might be exposed via ingestion of, dermal contact with, or inhalation of a contaminated medium, such as surface soil. Receptors who might be exposed under present or potential future land or water use scenario were evaluated.

The following presents the basic process for identifying and selecting exposure pathways in the PAR. An environmental medium contaminated by a previous release can be a contaminant source for other media. The identification of potential release mechanisms and receiving media were determined utilizing site histories and data from existing reports. Potential release sources, mechanisms of release, and receiving media that have been identified for the Horseshoe Road Complex Site include the following:

- Surface runoff from contaminated surface soil into surface water; episodic overland flow resulting from lagoon overflow, spills, or leaking containers; and seepage of contaminated groundwater into surface water.
- Leaching from surface or buried wastes into soil.
- Leaching from surface or buried wastes and contaminated soil into groundwater.
- Leaching from surface or buried wastes and contaminated soil into sediment; surface runoff and episodic overland flow from surface wastes and contaminated surface soil; and seepage of contaminated groundwater into sediment.
- Direct uptake of contaminated air, soil, groundwater, surface water, sediment, or other biota by biota.

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• Volatilization of chemicals from surface soil, surface water, or spills into the air; and fugitive dust generation from contaminated surface soil or building materials.

The fate and transport of the chemicals from release media were then considered to identify media that are receiving or that may receive site-related chemicals. Points of potential contact with chemically contaminated media (or sources) by human receptors were then considered. After exposure points were identified, potential exposure routes (i.e., ingestion, dermal contact, inhalation) were selected.

3.1 IDENTIFICATION OF EXPOSURE PATHWAYS

Complete exposure pathways for the Horseshoe Road Complex Site were selected by integrating the information above and are presented in Standard Table 1. Standard Table 4 presents the exposure variables to be used in the daily intake calculations for each complete exposure pathway.

3.1.1 **SOIL**

Surficial soil at the site may have been contaminated by direct spillage or from surface runoff. Subsurface soil may be contaminated as a result of leaching and downward migration of mobile contaminants. Exposure to soil contamination was considered for trespassers, residents, site workers, and construction workers under present- and potential future-use conditions. The ingestion, dermal contact, and inhalation routes of exposure have been considered for each of these receptors. Justification for the inclusion or exclusion of these exposure routes from quantitative evaluation is presented in Table 1.

Currently, there are no residents, site workers or construction workers at the site. There is both residential and commercial development within a one-mile radius of the site. The most likely current receptors for surficial soil are area residents/trespassers. Although ADC and ARC are completely surrounded by a chain link fence, with some minor institutional controls to prevent entry to the facility, entry to the site has occurred as evidenced by vandalism. According to the Sayreville Zoning Office, the site is located in an area that is currently zoned for heavy manufacturing and there are no future plans to change this zoning status. Therefore, surface soil may serve as both current and future exposure medium for trespassers, and a future exposure medium for site workers and construction workers. Ingestion, dermal contact, and inhalation of VOCs and particulates are potential exposure routes for surficial soil.

Subsurface soil is not an exposure medium under present-use conditions, since construction activities involving excavation are not currently in progress at the site. In the future, if excavation activities or significant soil erosion occurs and land use is unchanged or developed for commercial/industrial uses, potential receptors are trespassers, site workers, and construction workers. Potential exposure routes are ingestion, dermal contact, and inhalation of VOCs and particulates.

Per EPA Region II CERCLA guidance, arsenic, cadmium, chlordane, DDT, TCDD (dioxin), PAHs

(benzo(a)pyrene), PCBs (Aroclor 1254 and 1242), pentachlorophenol, generic default for SVOCs, and inorganics were quantitatively evaluated for the dermal contact pathway for the soil matrix.

The inhalation of VOCs pathway was eliminated from the risk assessment based on the results of the soil chemical concentration-toxicity screens and the selected chemicals of potential concern. Almost all of the COCs for soils were nonvolatiles (PAHs, PCBs, pesticides, and inorganics).

3.1.2 GROUNDWATER

Potable water is supplied to the Borough of Sayreville by the Sayreville Water Company, which maintains wells (drawing from the Old Bridge Member) and recharge lagoons within several miles south of the south. Although residences within the vicinity of the site are connected to the Borough of Sayreville's municipal water system, it is not known if some residents use residential well water for non-potable purposes. Although the potential exists for the site to be redeveloped for commercial/industrial uses, it is not likely that the site would be disconnected from the municipal water system and site groundwater used for potable uses.

In addition, the Conceptual Hydrogeologic Model developed for the site (Section 3.5.4 of the RI report) indicates the site is near the top of the Woodbridge clay unit. Regionally, the Woodbridge clay is part of an aquiclude that separated the Farrington and Old Bridge aquifers. The Farrington aquifer does not exist below the Woodbridge clay at the site. The Old Bridge Sand outcrops to the south, where it is both stratigraphically and topographically higher than the site. Therefore, the Horseshoe Road site is hydraulically isolated from the two regional aquifers.

Therefore, there is no complete exposure pathway for site groundwater under current and foreseeable future uses of the site. Justification for the inclusion or exclusion of scenarios for quantitative evaluation is presented in Table 1.

3.1.3 SURFACE WATER

Historical sampling at the site indicated surface water and sediment contamination. Onsite surface water and sediment (e.g., pond, stream, drainage channels and wetlands) and associated surface water run-off may currently be contacted by area residents/trespassers. Run-off from the site into the Raritan River may potentially pose a threat to residents using the river for recreational purposes and ingesting shellfish caught in the river. In the future, the area along the Raritan River may be developed into a public area, including a boardwalk, park, and retail shops. Incidental exposure to surface water may occur in this developed area. The potential exposure routes include ingestion of and dermal contact with surface water. Inhalation of VOCs released from surface water was eliminated as a pathway from the risk assessment based on the results of the surface water chemical concentration-toxicity screens and the selected chemicals of potential concern. Almost all of the COCs for surface water are nonvolatiles (inorganics). Justification for the inclusion or exclusion of scenarios for quantitative evaluation is presented in Table 1.

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3.1.4 **SEDIMENT**

Current receptors for sediment in onsite water bodies and the Raritan River include area residents/trespassers. Potential future receptors include residents who may come in direct contact with sediment during recreational activities. In the future, the area along the Raritan River may be developed into a public area, including a boardwalk, park, and retail shops. Incidental exposure to sediment may occur in this developed area. The potential exposure routes include ingestion of and dermal contact with sediment. Justification for the inclusion or exclusion of scenarios for quantitative evaluation is presented in Table 1.

3.1.5 BUILDING MATERIAL AND DUST

In the future, redevelopment of the site for commercial/industrial uses may occur. If the existing buildings are used, site and construction workers may be potentially exposed to building materials. The potential exposure routes are ingestion and dermal contact. Workers are not likely to be exposed to building floor concrete and subsurface soils below the floor, therefore exposure to these surfaces were not quantitatively evaluated. In general, concentrations of compounds were detected at higher concentrations in building materials, than the building floor concrete and soils below the floor. Therefore, the risks calculated for site workers and construction workers should be protective of less frequent exposures to these other surfaces. Justification for the inclusion or exclusion of scenarios for quantitative evaluation is presented in Table 1.

3.2 EXPOSURE POINT CONCENTRATIONS

Concentrations at potential exposure points (any point of potential contact with a contaminated medium) were developed for each COC and AOC in surface soil, subsurface soil, surface water, sediment, and building materials for use in calculation of daily intakes. Because of the uncertainty associated with any estimate of exposure concentration, the 95 percent UCL on the arithmetic mean is used for this variable. If there is a large variability in measured or modeled concentrations, the 95 percent UCL may exceed the maximum measured or modeled values, in which case, the maximum detected or modeled value is used. Although this concentration does not reflect the maximum concentration that could be contacted at any one time, it is considered a reasonable estimate of the concentration likely to be contacted over time, because long-term contact with the maximum concentration is not a reasonable assumption.

For the site's database, a lognormal distribution was assumed. The formula used to calculate the 95 percent UCL for a lognormal distribution is as follows:

$$UCL = e^{(x + 0.5s2 + sH/\sqrt{n-1})}$$

Where:

UCL = upper confidence limit e = constant (base of the natural log, equal to 2.718)

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x = mean of the transformed data

s = standard deviation of the transformed data

H = H-statistic (i.e., from table published in Gilbert, 1987)

n = number of samples

In calculating this value, non-detects were accounted for by using one-half the SQL. If one-half the SQL exceeded the maximum detection, the maximum detection was utilized as the default value. Duplicate samples were averaged prior to calculating the UCLs. The average concentrations is presented in the UCL tables as "Sample ID-AV". EPCs for subsurface soils were based on samples collected from less than 15 feet. Depths of greater than 15 feet are deeper than the depth of typical excavation activities.

Appendix D presents the calculated 95 percent UCL concentrations used to estimate carcinogenic risks and noncarcinogenic hazards. Standard Tables 3.1 through 3.5 present the medium-specific exposure point concentration summaries.

3.3 <u>CALCULATION OF DAILY INTAKES</u>

To assess the potential carcinogenic risks and health hazards to human populations quantitatively based on the present-use and potential future-use scenarios discussed in Section 3.1, daily intakes were calculated. For daily intakes, intakes are averaged over a lifetime for carcinogenic chemicals and over the period of exposure for noncarcinogens. The daily intake is expressed in terms of the mass of the chemical contaminant per unit of body weight over the averaging time (mg chemical/kg body weight-day).

Equations presented and described in RAGS (EPA, 1989a) were used to estimate daily intakes from ingestion and dermal contact exposures. These equations and values used for daily intake calculations are presented in Standard Tables 4.1 through 4.13.

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4.0 TOXICITY ASSESSMENT

In the toxicity assessment portion of the risk assessment, the relationship between the potential level of exposure (dose) and the likelihood and/or severity of adverse effects (response) were evaluated. As part of this evaluation, available toxicity values or dose/response parameters for the chemicals detected at the site were compiled. These dose/response parameters were used in the chemical concentration-toxicity screens and integrated with chemical intake levels derived in exposure assessment to characterize the level of potential risks and health effects.

Dose/response parameters have been developed by EPA for the evaluation of both noncarcinogenic and carcinogenic effects of exposure to humans. The oral and inhalation reference doses (RfDs) are the toxicity values used to evaluate noncarcinogenic effects resulting from exposure. The oral and inhalation cancer slope factors (CSFs) are used to evaluate potential carcinogenic effects. Oral RfDs and inhalation reference concentrations (RfCs), as well as SFs derived for oral and inhalation exposures, are available through EPA's on-line Integrated Risk Information System (IRIS) and Health Effects Assessment Summary Tables (HEAST) Annual FY-1997. When a value was not available through these sources, the EPA's National Center for Environmental Assessment (EPA-NCEA) was consulted.

4.1 NONCARCINOGENIC EFFECTS

4.1.1 DEFINITION AND DERIVATION OF REFERENCE DOSES

Toxicity values are available depending on the exposure route (oral or inhalation), the critical effect, and the length of exposure (e.g., chronic) to be evaluated. Chronic and subchronic oral and inhalation RfDs may be used to evaluate noncarcinogenic effects. A chronic RfD is defined as an estimate of a daily exposure level for the human population, including sensitive subpopulations, that is likely to be without an appreciable risk of harmful effects during a lifetime. Chronic RfDs are specifically developed to be protective of long-term exposure to a chemical, and are defined as exposure periods exceeding seven years (approximately ten percent of a human lifetime of 70 years). Subchronic RfDs are used to characterize potential noncarcinogenic effects associated with shorter-term exposure periods between 2 weeks and approximately 7 years.

RfDs are derived by EPA based on the concept of a threshold. For many noncarcinogenic effects, protective mechanisms may exist which must be overcome before an adverse effect is manifested. A range of exposure levels may be tolerated by an organism before an adverse effect occurs. In the development of the RfDs, human epidemiological and clinical studies, and experimental animal studies are reviewed to identify the upper-bound of the tolerance range (i.e., maximum subthreshold level) which is protective of sensitive individuals in the population. The no observed adverse effect level (NOAEL) or lowest observed adverse effect level (LOAEL) is generally used to describe this level and is the basis for the derivation of the RfD. Uncertainty and modifying factors are then applied to the NOAEL, depending on the quality and the applicability of the available animal or human toxicity study, as the final step in the derivation of the RfD. The resultant oral RfD is

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expressed in terms of unit concentration of a chemical (mg) per unit body weight (kg) per unit time (day) or mg/kg/day.

Inhalation RfCs, expressed in mg/m³, are derived by interim methods adopted by EPA in 1988. These methods differ slightly from those used for the derivation of RfDs because of (1) dynamics of the respiratory system and its diversity across species, and (2) differences in physicochemical properties of chemical contaminants, such as size and shape of a particle. The RfC value is reported as a concentration in air (mg/m³), although it may be converted to a corresponding inhaled dose (mg/kg/day) by dividing by 70 kg body weight and multiplying by 20 m³/day inhalation rate.

4.1.2 RfDS FOR DETECTED CHEMICAL CONTAMINANTS

Chronic oral RfDs, primary target organs, and the uncertainty factors associated with them for chemicals detected in historical site investigations are presented in Standard Table 5.1. These RfDs were used in the concentration-toxicity screens to select contaminants of concern (COCs), and in the calculation of ingestion and dermal noncarcinogenic hazard quotients (Standard Table 7). No COCs were evaluated for inhalation exposures, therefore, no inhalation reference concentrations were applicable (Standard Table 5.2). In addition, no special case chemicals were evaluated, therefore, no toxicity values were applicable for special case chemicals (Standard Table 5.3).

4.2 CARCINOGENIC EFFECTS

4.2.1 DEFINITION AND DERIVATION OF SLOPE FACTORS

The carcinogenic slope factor and the accompanying weight-of-evidence classification are used to evaluate potential human carcinogenic risks associated with exposures. The hypothesized mechanism of carcinogenesis is based on the concept of nonthreshold effects (i.e., there is essentially no level of exposure to a chemical that does not pose some probability of generating a carcinogenic response).

In defining the potential carcinogenicity of a chemical contaminant to humans, EPA first evaluates the sufficiency of evidence of carcinogenicity from available data. The evidence is characterized separately for human and animal studies as sufficient, limited, adequate, no data, or evidence of no effect. The characterizations of these two sets of data are evaluated in combination and the chemical is assigned a "weight-of-evidence" classification. EPA has five groups of classification which are as follows:

- A Human Carcinogen.
- B1 Probable Human Carcinogen. Limited human data are available.
- B2 Probable Human Carcinogen. Sufficient evidence of carcinogenicity in animals and inadequate or no evidence in humans.
- C Possible Human Carcinogen.
- D Not Classifiable as to human carcinogenicity.

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E - Evidence of noncarcinogenicity for humans.

For Group A, B1, and B2 carcinogens, EPA typically derives a carcinogenic slope factor. Slope factors for Class C carcinogens are derived on a case-by-case basis. The slope factor defines quantitatively the relationship between dose and response as the plausible upper-bound estimate of the probability of a response (i.e., development of cancer) per unit intake of a potential carcinogen over a lifetime.

The slope factor is derived by EPA by selecting the most appropriate data set, extrapolating to lower doses, determining equivalent human doses for the appropriate route of exposure (ingestion or inhalation), and application of uncertainty factors. The resultant slope factor is expressed in terms of risk per unit concentration of the chemical (mg) per unit body weight (kg) per unit time (day) or (mg/kg/day)⁻¹.

4.2.2 SLOPE FACTORS FOR DETECTED CHEMICAL CONTAMINANTS

Oral slope factors and weight-of-evidence classifications for potentially carcinogenic chemicals detected in historical site investigations are presented in Standard Table 6.1. These cancer slope factors (CSFs) were used in the concentration-toxicity screens to select contaminants of concern (COCs), and in the calculation of ingestion and dermal carcinogenic risks (Standard Table 8). No COCs were evaluated for inhalation exposures, therefore, no inhalation slope factors were applicable (Standard Table 6.2). In addition, no special case chemicals were evaluated, therefore, no toxicity values were applicable for special case chemicals (Standard Table 6.3).

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5.0 RISK CHARACTERIZATION

In this section of the risk assessment, toxicity and exposure assessments were integrated into quantitative and qualitative expressions of carcinogenic risk and noncarcinogenic hazards. The estimate of risk and hazard were expressed numerically in spreadsheets contained in Standard Tables 7 and 8. Tables represent the reasonable maximum exposure as indicated by the abbreviation RME after the table number.

The potential for noncarcinogenic effects was evaluated by comparing an exposure level over a specified time period with a reference dose derived for a similar exposure period. This ratio of exposure to toxicity is referred to as a hazard quotient. The hazard index is the sum of the HQs. This hazard index assumes that there is a level of exposure below which it is unlikely even for sensitive populations to experience adverse health effects. If the hazard index exceeds 1, there may be concern for potential noncancer effects, however, this value should not be interpreted as a probability. Generally, the greater the hazard index above unity, the greater the level of concern. Calculation of non-cancer hazards are presented in Standard Tables 7.1 through 7.13.

Carcinogenic risks are estimated as the incremental probability of an individual developing cancer over a lifetime as a result of exposure to a potential carcinogen. Per RAGS guidance, the slope factor converts estimated daily intakes averaged over a lifetime of exposure directly to incremental risk of an individual developing cancer. This carcinogenic risk estimate is generally an upper-bound value since the slope factor is often an upper 95th percentile confidence limit of the probability of response based on experimental animal data used in the multistage model. Calculation of cancer risks are presented in Standard Tables 8.1 through 8.13.

In general, EPA recommends a target value or a risk range (i.e., hazard index = 1 or risk = 10^{-4} to 10^{-6}) as threshold values for potential human health impacts. The results presented in the spreadsheet calculations were compared to these target values. These values aid in determining the objectives of the baseline risk assessment which include determining whether additional response action is necessary at the site, by providing a basis for determining residual chemical levels that are adequately protective of human health, by providing a basis for comparing potential health impacts of various remedial alternatives, and to help support selection of the no-action remedial alternative, where appropriate.

Carcinogenic risks and noncarcinogenic hazard indices are summarized for each receptor by medium, exposure route, and exposure point (Standard Table 9).

A summary for each receptor by medium, exposure route, and exposure point that trigger the need for cleanup are presented in Standard Table 10.

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5.1 QUANTITATIVE RESULTS OF CARCINOGENIC RISK AND NONCARCINOGENIC EFFECTS EVALUATION

5.1.1 AREA RESIDENTS (TRESPASSERS)

The results of carcinogenic risk and noncarcinogenic hazard index calculations for current and future area residents (trespassers) are presented in Standard Table 9.1. For AOC 1 - HRDD, exposures to area residents (trespassers) were evaluated for surface soil, surface water, and sediment. The total risk across all media and all exposure routes is 2.3E-05. The total hazard index across all media and all exposure routes is 0.71.

For AOC 2 - ADC, exposures to area residents (trespassers) were evaluated for surface soil, building materials, surface water, and sediment. The total risk across all media and all exposure routes is 3.2E-04. This risk is primarily attributed to carcinogenic PAHs in building materials. The total hazard index across all media and all exposure routes is 3.3. The total HI for the skin is 3.1 attributed to arsenic in surface soil and sediment. In addition, lead was detected in surficial soils at concentrations exceeding EPA's recommended lead screening level of 400 ppm for residential settings.

For AOC 3 - SPD, exposures to area residents (trespassers) were evaluated for surface soil, surface water, and sediment. The total risk across all media and all exposure routes is 1.0E-06. The total hazard index across all media and all exposure routes is 0.071.

For AOC 4 - ARC, exposures to area residents (trespassers) were evaluated for surface soil, building materials, surface water, and sediment. The total risk across all media and all exposure routes is 3.3E-05. The total hazard index across all media and all exposure routes is 7.3. The total HI for whole body/blood is 6.0 attributed to antimony in building materials, and for immune system is 1.2 attributed to PCBs in sediment and building materials. In addition, lead was detected in surficial soils at concentrations exceeding EPA's recommended lead screening level of 400 ppm for residential settings.

For AOC 5 - DSM, exposures to area residents (trespassers) were evaluated for surface water, and sediment. The total risk across all media and all exposure routes is 8.3E-05. The total hazard index across all media and all exposure routes is 2.1. The total HI for skin is 2.1 attributed to arsenic in sediment.

For AOC 6 - RR, exposures to area residents (trespassers) were evaluated for surface water, and sediment. The total risk across all media and all exposure routes is 4.2E-05. The total hazard index across all media and all exposure routes is 1.1. The total HI for skin is 1.1 attributed to arsenic in sediment

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5.1.2 RESIDENTS

<u>Adults</u> - The results of carcinogenic risk and noncarcinogenic hazard index calculations for current and future adult residents are presented in Standard Table 9.2a. For AOC 5 - DSM, exposures to adult residents were evaluated for shellfish, surface water, and sediment. The total risk across all media and all exposure routes is 3.9E-04 attributed to arsenic in sediment. The total hazard index across all media and all exposure routes is 2.6. The total HI for skin is 2.6 attributed to arsenic in sediment.

For AOC 6 - RR, exposures to adult residents were evaluated for shellfish, surface water, and sediment. The total risk across all media and all exposure routes is 1.9E-04 attributed to arsenic in sediment. The total hazard index across all media and all exposure routes is 1.3. The total HI for skin is 1.2 attributed to arsenic in sediment.

<u>Children</u> - The results of carcinogenic risk and noncarcinogenic hazard index calculations for future child residents are presented in Standard Table 9.2b. For AOC 5 - DSM, exposures to child residents were evaluated for surface water, and sediment. The total risk across all media and all exposure routes is 6.1E-04 attributed to arsenic in sediment. The total hazard index across all media and all exposure routes is 16. The total HI for skin is 16 attributed to arsenic in sediment.

For AOC 6 - RR, exposures to child residents were evaluated for surface water, and sediment. The total risk across all media and all exposure routes is 3.1E-04 attributed to arsenic in sediment. The total hazard index across all media and all exposure routes is 8.1. The total HI for skin is 8.0 attributed to arsenic in sediment.

5.1.3 SITE WORKERS

The results of carcinogenic risk and noncarcinogenic hazard index calculations for future site workers are presented in Standard Table 9.3. For AOC 1 - HRDD, exposures to site workers were evaluated for surface soil, subsurface soil, and test pit soil. The total risk across all media and all exposure routes is 1.3E-03. This risk is primarily attributed to PCBs in surface soil and test pit soil, and arsenic in test pit soil. The total hazard index across all media and all exposure routes is 13. The total HI for skin is 5.8 primarily attributed to arsenic in test pit soil, for whole body/blood is 3.5 attributed to antimony in test pit soil, and for the immune system is 3.1 primarily attributed to PCBs in test pit soil.

For AOC 2 - ADC, exposures to site workers were evaluated for surface soil, subsurface soil, and building materials. The total risk across all media and all exposure routes is 3.4E-02. This risk is attributed to carcinogenic PAHs in surface soil, subsurface soil, and building materials, PCBs in surface soil and subsurface soil, arsenic in surface soil, subsurface soil, and building materials, and 1,2-dichloroethane in subsurface soil. The total hazard index across all media and all exposure routes is 41. The total HI for the skin is 34 attributed to arsenic in surface soil and subsurface soil, for kidney is 1.5 primarily attributed to fluoranthene and pyrene in building materials, and for

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reproductive effects is 2.3 attributed to methoxychlor in surface soil and subsurface soil. Lead was detected in surficial soils at concentrations within EPA's recommended screening range of 750 to 1750 ppm for commercial/industrial uses.

For AOC 3 - SPD, exposures to site workers were evaluated surface soil, subsurface soil, and test pit soil. The total risk across all media and all exposure routes is 7.9E-04. This risk is primarily attributed to hexachloroethane in test pit soil, PCBs in test pit soil, arsenic in surface soil, subsurface soil, and test pit soil, and carcinogenic PAHs in surface soil and test pit soil The total hazard index across all media and all exposure routes is 68. The total HI for kidney is 63 attributed to hexachloroethane in test pit soil, and for the immune system is 2.6 attributed to PCBs in test pit soils.

For AOC 4 - ARC, exposures to site workers were evaluated surface soil, subsurface soil, and building materials. The total risk across all media and all exposure routes is 2.7E-03. The total hazard index across all media and all exposure routes is 100. This risk is attributed to 2,3,7,8-TCDD equivalents in surface soil and building materials, arsenic in surface soil and building materials, PCBs in surface soil and building materials, and carcinogenic PAHs in surface soil. The total HI for whole body/blood is 84 attributed to antimony in building materials, for immune system is 14 attributed to PCBs in building materials, and for the skin is 2.2 attributed to arsenic in building materials. Lead was detected in surficial soils at concentrations exceeding EPA's recommended screening range of 750 to 1750 ppm for commercial/industrial uses.

5.1.4 CONSTRUCTION WORKERS

The results of carcinogenic risk and noncarcinogenic hazard index calculations for future construction workers are presented in Standard Table 9.4. For AOC 1 - HRDD, exposures to construction workers were evaluated for surface soil, subsurface soil, and test pit soil. The total risk across all media and all exposure routes is 3.4E-05. The total hazard index across all media and all exposure routes is 10. The total HI for whole body/blood is 4.4 attributed to antimony in test pit soil, for skin is 4.3 primarily attributed to arsenic in test pit soil, and for the immune system is 1.2 attributed to PCBs in test pit soil.

For AOC 2 - ADC, exposures to construction workers were evaluated for surface soil, subsurface soil, and building materials. The total risk across all media and all exposure routes is 5.9E-04. This risk is attributed to carcinogenic PAHs in building materials. The total hazard index across all media and all exposure routes is 28. The total HI for the skin is 26 attributed to arsenic in surface and subsurface soil, and for reproductive effects is 1.1 attributed to methoxychlor is surface soil and subsurface soil. Lead was detected in surficial soils at concentrations within EPA's recommended screening range of 750 to 1750 ppm for commercial/industrial uses.

For AOC 3 - SPD, exposures to construction workers were evaluated surface soil, subsurface soil, and test pit soil. The total risk across all media and all exposure routes is 1.5E-05. The total hazard index across all media and all exposure routes is 31. The total HI for kidney is 28 attributed to HHRA.DOC

hexachloroethane in test pit soil, and for the immune system is 1.1 attributed to PCBs in test pit soil.

For AOC 4 - ARC, exposures to construction workers were evaluated surface soil, subsurface soil, and building materials. The total risk across all media and all exposure routes is 7.6E-05. The total hazard index across all media and all exposure routes is 120. The total HI for whole body/blood is 110 attributed to antimony in building materials, for immune system is 5.5 attributed to PCBs in building materials, and for the skin is 1.7 attributed to arsenic in building materials. Lead was detected in surficial soils at concentrations exceeding EPA's recommended screening range of 750 to 1750 ppm for commercial/industrial uses.

5.2 <u>COPCS AND MEDIA/EXPOSURE POINTS THAT TRIGGER THE NEED FOR CLEANUP</u>

Cancer risk and non-cancer hazard information for only those COPCs and media/exposure points that trigger the need for cleanup (the risk drivers) are presented in Standard Table 10. In accordance with the National Oil and Hazardous Substance Pollution Contingency Plan (NCP) Section 300.430 (e)(2) for known or suspected carcinogens, acceptable exposure levels are generally concentration levels that represent an excess upper-bound lifetime cancer risk to an individual of between 10⁻⁴ and 10⁻⁶. Per RAGS Part B: Development of Risk-Based Preliminary Remediation Goals (USEPA, 1991b), for noncarcinogenic effects, the NCP does not specify a range, but it is generally appropriate to assume a hazard index equal to 1.

5.2.1 AREA RESIDENTS (TRESPASSERS)

The COPCs and media/exposure points for current and future area residents (trespassers) that trigger the need for cleanup are presented in Standard Table 10.1.

For AOC 2 - ADC, total risk for area residents (trespassers) exceeds 10-4 and the total HI exceeds 1.0. The risk exceedance is primarily attributed to carcinogenic PAHs in building materials. The HI exceedance is attributed to arsenic in surface soil and sediment. In addition, lead was detected in surficial soils at concentrations exceeding EPA's recommended lead screening level of 400 ppm for residential settings.

For AOC 4 - ARC, the total HI exceeds 1.0. The HI exceedance is primarily attributed to antimony in building materials. The individual HQs for Aroclor-1254 in building materials and sediment are less than 1. Lead was detected in surficial soils at concentrations exceeding EPA's recommended lead screening level of 400 ppm for residential settings.

For AOC 5 - DSM, the total HI exceeds 1.0. The HI exceedance is attributed to arsenic in sediment.

For AOC 6 - RR, the total HI exceeds 1.0. The exceedance is attributed to arsenic in sediment.

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5.2.2 RESIDENTS

<u>Adults</u> - The COPCs and media/exposure points for current and future adult residents that trigger the need for cleanup are presented in Standard Table 10.2a.

For AOC 5 - DSM, total risk for adult residents exceeds 10-4 and the total HI exceeds 1.0. The risk exceedance is attributed to arsenic in sediment. The HI exceedance is attributed to arsenic in sediment.

For AOC 6 - RR, total risk for adult residents exceeds 10-4 and the total HI exceeds 1.0. The risk exceedance is attributed to arsenic in sediment. The HI exceedance is attributed to arsenic in sediment.

<u>Children</u> - The COPCs and media/exposure points for future child residents that trigger the need for cleanup are presented in Standard Table 10.2b.

For AOC 5 - DSM, total risk for child residents exceeds 10-4 and the total HI exceeds 1.0. The risk exceedance is attributed to arsenic in sediment. The HI exceedance is attributed to arsenic in surface water and sediment.

For AOC 6 - RR, total risk for child residents exceeds 10-4 and the total HI exceeds 1.0. The risk exceedance is attributed to arsenic in sediment. The HI exceedance is attributed to arsenic in sediment.

5.2.3 SITE WORKERS

The COPCs and media/exposure points for future site workers that trigger the need for cleanup are presented in Standard Table 10.3.

For AOC 1 - HRDD, total risk for site workers exceeds 10-4 and the total HI exceeds 1.0. The risk exceedance is attributed to PCBs and arsenic in surface soil and test pit soil. The HI exceedance is attributed to primarily to antimony, PCBs and arsenic in test pit soil.

For AOC 2 - ADC, total risk for site workers exceeds 10-4 and the total HI exceeds 1.0. The risk exceedance is attributed to carcinogenic PAHs in surface soil, subsurface soil, and building materials, arsenic in surface soil, subsurface soil, and building materials, and PCBs in surface and subsurface soil. The HI exceedance is attributed to arsenic and methoxychlor in surface and subsurface soil, and fluoranthene and pyrene in building materials.

For AOC 3 - SPD, total risk for site workers exceeds 10-4 and the total HI exceeds 1.0. The risk exceedance is primarily attributed to hexachloroethane, PCBs, and arsenic in test pit soil. In addition, arsenic in surface soil and subsurface soil also attributed to the total risk exceedance. The HI exceedance is attributed to hexachloroethane and PCBs in test pit soil.

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For AOC 4 - ARC, total risk for site workers exceeds 10-4 and the total HI exceeds 1.0. The risk exceedance is primarily attributed to 2,3,7,8-TCDD, PCBs and arsenic in building materials. In addition, PCBs and arsenic in surface soil attributed to the total risk exceedance. The HI exceedance is attributed to antimony, PCBs, and arsenic in building materials. Lead was detected in surficial soils at concentrations exceeding EPA's recommended screening range of 750 to 1750 ppm for commercial/industrial uses.

5.2.4 CONSTRUCTION WORKERS

The COPCs and media/exposure points for future construction workers that trigger the need for cleanup are presented in Standard Table 10.4.

For AOC 1 - HRDD, the total HI for construction workers exceeds 1.0. The HI exceedance is attributed to primarily to antimony, PCBs and arsenic in test pit soil.

For AOC 2 - ADC, total risk for construction workers exceeds 10-4 and the total HI exceeds 1.0. The risk exceedance is attributed to carcinogenic PAHs in building materials. The HI exceedance is attributed to arsenic and methoxychlor in surface and subsurface soil.

For AOC 3 - SPD, the total HI for construction workers exceeds 1.0. The HI exceedance is attributed to hexachloroethane, copper, and PCBs in test pit soil.

For AOC 4 - ARC, the total HI for construction workers exceeds 1.0. The HI exceedance is attributed to antimony, PCBs, and arsenic in building materials. Lead was detected in surficial soils at concentrations exceeding EPA's recommended screening range of 750 to 1750 ppm for commercial/industrial uses.

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6.0 UNCERTAINTIES IN RISK ASSESSMENT

The primary areas of uncertainty and limitations are qualitatively discussed in this section. As in any risk assessment, the estimates of potential health threats (carcinogenic risks and noncarcinogenic health effects) for the Horseshoe Road Complex site has numerous associated uncertainties. In general, the primary areas of uncertainty include the following:

- Environmental data
- Exposure pathway assumptions
- Toxicological data
- Risk characterization

Uncertainty is always involved in the estimation of chemical concentrations. Errors in the analytical data may stem from errors inherent in sampling and/or laboratory procedures. One of the most effective methods of minimizing procedural or systematic error is to subject the data to a strict quality control review. This quality control review procedure helps to eliminate many laboratory errors. However, even with all data vigorously validated, it must be realized that error is inherent in all laboratory procedures.

The lack of site-specific exposure measurements requires that estimates be made on the basis of literature values and/or professional judgement. These types of estimates were required in the evaluation of exposure scenario input parameters. For example, assumptions were made for the exposure time, frequency, and duration of potential chemical exposures as well as for the quantity of ingested and/or inhaled chemical contaminants. In general, assumptions were made based on reasonable maximum exposures.

Other standard assumptions used throughout this risk assessment are assumed to represent average values (i.e., 70 kg average adult body weight) or upper-bounds of potential exposure (i.e., inhalation rate) and have been used as appropriate.

Other sources of error in the risk assessment can stem from the use of estimated concentrations and can arise during the calculation of 95 percent UCLs. For example, one-half the SQL was used in the 95 percent UCL calculation as a proxy concentration for non-detect chemicals per RAGS (USEPA, 1989a).

Toxicological data uncertainty is one of the largest sources of error in this risk assessment. Numerous uncertainties are associated with USEPA-derived toxicity values used in risk assessment. However, these uncertainties tend to be conservative by overestimating risks. One source of uncertainty may include using dose-response information from effects observed at high doses in animals to predict adverse health effects from low level exposures to humans in contact with the chemical in the environment. Another source may be the use of dose-response information from short-term exposure studies to predict the effects of long-term exposure and vice versa. Uncertainties may also arise from using dose-response information in animals to predict human

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health effects and from homogeneous animal and healthy human populations to predict effects likely to be observed in the general population which consists of individuals with varying sensitivities. In addition, the inability to quantitatively evaluate all chemicals detected at the site due to the lack of sufficient toxicological data may result in underestimation of risks and/or health effects.

Other toxicological data uncertainty in this risk assessment includes the use of the benzo(a)pyrene oral slope factor in conjunction with relative potency values to develop slope factors for numerous other carcinogenic PAHs, the combining of carcinogens with different weights-of-evidence in the calculation of risk; and the combining of noncarcinogens with different toxicity endpoints in the calculation of hazard index values.

Uncertainty is also involved in the calculation of risk and hazard estimates via the dermal contact with soil pathway. Only specific chemicals could be quantitatively evaluated via this route since these are the only chemicals detected in site soil which have USEPA Region II recommended soil dermal absorption factors. The potential exists to underestimate risks/impacts via this pathway since all other chemicals detected in the soil could only be qualitatively addressed. An additional source of uncertainty may include the use of an oral reference dose to evaluate dermal exposure (i.e., arsenic, PCBs).

As a result of the uncertainties described above, this risk assessment should not be construed as presenting absolute risks or hazards. Rather, it is a conservative analysis intended to indicate the potential for adverse impacts to occur, based on a reasonable maximum exposure.

6.1 <u>CENTRAL TENDENCY CALCULATIONS</u>

Central tendency is a statistical measure that identifies the single most representative value for an entire distribution of values. As a quantitative measure of uncertainty in this risk assessment, central tendency calculations have been performed utilizing 50th percentile input parameters (i.e., exposure duration) in the risk and hazard index calculations as opposed to the more conservative parameters generally used in risk assessment calculations. Ninetieth percentile input parameters are used in the risk assessment for calculation of risk and hazard index values in a given pathway so that the combination of all intake variables results in an estimate of the RME for that pathway. The RME is the maximum exposure that is reasonably expected to occur at a site.

The 50th percentile values used in the central tendency calculations are considered to be representative of the general receptor population, but may underestimate the true carcinogenic risk and/or noncarcinogenic health effects to sensitive receptors. Standard Table 4 presents the exposure parameters to be utilized in the calculation of central tendency for those exposure pathways which have results in exceedance of the 1.0E-04 for carcinogens and 1 for noncarcinogens. These parameters were based on RAGS (USEPA, 1989a), Exposure Factors Handbook (USEPA, 1997), Region II guidance.

Standard Tables 7.CT and 8.CT present the results of the central tendency calculations. The HHRA.DOC

receptors, media, and exposure pathways which have results in exceedance of the 1.0E-04 for carcinogens and 1 for noncarcinogens are summarized below and in Standard Tables 9.CT and 10.CT.

6.1.1 RESIDENTS

<u>Children</u> - For AOC 5 - DSM, total risk for future child residents exceeds 10-4 and the total HI exceeds 1.0. The risk and HI exceedance is attributed to arsenic in sediments.

For AOC 6 - RR, the total HI exceeds 1.0. The HI exceedance is attributed to arsenic in sediments.

6.1.2 SITE WORKERS

For AOC 2, total risk for future site workers exceeds 10-4 and the total HI exceeds 1. The risk exceedance is attributed to carcinogenic PAHs in building materials. For the total HI of 1.4, none of the His for specific target organs exceed 1.

For AOC 4, total risk for future site workers exceeds 10-4 and the total HI exceeds 1. The risk exceedance is attributed to 2,3,7,8-TCDD equivalents and arsenic in building materials. The HI exceedance is primarily attributed to antimony in building materials.

6.1.3 CONSTRUCTION WORKERS

For AOC 2, total risk for future construction workers exceeds 10-4 and the total HI exceeds 1. The risk exceedance is attributed to carcinogenic PAHs in building materials.

For AOC 4, the total HI exceeds 1. The HI exceedance is attributed to antimony, PCBs, and arsenic in building materials.

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7.0 PRELIMINARY REMEDIATION GOALS

7.1 <u>DEFINITION OF PRELIMINARY REMEDIATION GOALS</u>

Chemical-specific preliminary remediation goals (PRGs) are concentration goals for individual chemicals for specific medium and land use combinations at CERCLA sites. In this section, chemical-specific PRGs were developed based on the risk assessment (i.e., risk-based calculations). Available site-specific parameters were used in place of default parameters to reflect site-specific conditions. Risk-based PRGs are initial guidelines only; they do not establish that cleanup to these goals is warranted. A risk-based concentration will be considered a final remediation level after analysis in the RI/FS and ROD.

For this risk assessment, risk-based PRGs are needed for chemicals in medium with a cumulative cancer risk of greater than 1.0E-04 and where a hazard index is greater than 1. Upon review of the spreadsheet calculations for site soils, surface, sediment, and building materials several exceedances of the USEPA's target levels were noted. EPA will use it's discretion to estimate PRGs were risks are between 1.0E-04 to 1.0E-6.

The risk-based equations used reflect the potential risk from exposure to a chemical given a specific pathway, medium, and land use combination. By setting the risk at 10⁻⁶ for a carcinogen and the hazard index equal to 1 for a noncarcinogen, the concentration term (risk-based PRG) can be calculated. The formulae to be used were obtained from the RAGS Human Health Evaluation Manual, Part B: Development of Risk-Based Preliminary Remediation Goals (EPA, 1991b) and site-specific equations and assumptions presented in Standard Table 4. Risk-based PRGs for the applicable carcinogenic and the noncarcinogenic compounds in site medium are presented in Appendix F.

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8.0 SUMMARY OF THE BASELINE RISK ASSESSMENT

In this baseline human health risk assessment, the site matrices surface soil, subsurface soil, surface water, sediment, and building materials at the Horseshoe Road Complex site were quantitatively evaluated for potential health threats to human receptors via the ingestion and dermal contact routes of exposure. Receptors including trespassers (area residents), residents (adults and children), site workers, and construction workers were evaluated under present and potential future land use conditions, as appropriate. The estimates of risk and hazard and the greatest chemical contributors to these estimates have been presented and discussed.

Chemicals of potential concern were selected for each matrix based on criteria outlined in RAGS (USEPA, 1989a) and are presented in Appendix C. The chemicals of potential concern included VOCs, SVOCs, pesticides, PCBs, and inorganics. The essential nutrients (i.e., calcium, magnesium, potassium, and sodium) were not quantitatively addressed as their potential toxicity is significantly lower than other inorganics at the site, and most existing toxicological data pertain to dietary intake.

Exposure routes and human receptor groups were identified and quantitative estimates of the magnitude, frequency, and duration of exposure were made. Exposure points were estimated using the 95 percent UCL calculation. Chronic daily intakes for the ingestion, and dermal contact routes were calculated for the reasonable maximum exposure (i.e., using 95 percent UCL concentrations and the 90th and 95th percentile exposure parameters).

In the toxicity assessment, current toxicological human health data (i.e., reference doses, reference concentrations, and slope factors) were obtained from various sources and were utilized in the order as specified by RAGS (USEPA, 1989a). Toxicological profiles for the chemicals of potential concern have been developed and are presented in Appendix E.

Risk characterization involved integrating the exposure and toxicity assessments into quantitative expressions of risks/health effects. Specifically, chronic daily intakes are multiplied by the cancer slope factors to estimate potential risk since only the hazard index is calculated by comparison. The carcinogenic risks and noncarcinogenic hazard index values calculated for the site are based on the reasonable maximum exposure (the highest exposure reasonably expected to occur at a site). The intent is to estimate a conservative exposure case that is still within the range of possible exposures.

In accordance with the National Oil and Hazardous Substance Pollution Contingency Plan (NCP) Section 300.430 (e)(2) for known or suspected carcinogens, acceptable exposure levels are generally concentration levels that represent an excess upper-bound lifetime cancer risk to an individual of between 10⁻⁴ and 10⁻⁶. Per RAGS Part B: Development of Risk-Based Preliminary Remediation Goals (USEPA, 1991b), for noncarcinogenic effects, the NCP does not specify a range, but it is generally appropriate to assume a hazard index equal to 1.

In general, the USEPA recommends target values or ranges (i.e., risk of 10⁻⁶ or hazard index of one) as threshold values for potential human health impacts (USEPA, 1989a). These target values HHRA.DOC

aid in determining the objectives of the baseline human health risk assessment which include determining whether additional response action is necessary at the site, by providing a basis for determining residual chemical levels that are adequately protective of human health, by providing a basis for comparing potential health impacts of various remedial alternatives, and to help support selection of the "no action" remedial alternative, where appropriate.

In summary, a review of the overall carcinogenic risks and noncarcinogenic hazards for the various AOCs, matrices, and receptor populations showed a number of exceedances of the USEPA's target risk range of 10⁻⁴ to 10⁻⁶.

Site-specific uncertainties relating to the risk assessment were qualitatively addressed in Section 6.0. In accordance with standard risk assessment practice, central tendency calculations were performed as a quantitative measure of uncertainty in the risk assessment. The 50th percentile parameters to be used in these calculations and presented in Standard Table 4 were assumed to be representative of the general population. These central tendency calculations, however, have the potential to underestimate true risks/hazard indices for sensitive receptors.

Finally, risk-based PRGs were calculated for industrial land use for COCs with risks greater than 1.0E-04 and hazard indices greater than 1. Risk-based PRGs are initial guidelines only and do not establish that cleanup to these goals is required. A risk-based concentration is considered a final remediation level only after analysis in the RI/FS and ROD.

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9.0 REFERENCES

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STANDARD TABLES

TABLE 1
SELECTION OF EXPOSURE PATHWAYS
HORSESHOE ROAD COMPLEX SITE, SAYREVILLE, NEW JERSEY

Scenario Timeframe	Medium	Exposure Medium	Exposure Point	Receptor Population	Receptor	Exposure Route	On-Site/ Off-Site	Type of Analysis	Rationale for Selection or Exclusion of Exposure Pathway
Current	Soll	Surface Soil	Attentic Development Corp. Horseshoe Road Drum Dump Sayrevitle Pesticide Dump Attentic Resources Corp.	Area Residents (Trespassers)	Youth	Ingestion Dermal Contact Inhalation of VOCs and Particulates	On-Site	Quant Quant* Qual**	The site is not currently used for industry. The facility has some minor institutional controls to prevent entry to the site, however entry has occurred as evidenced by vandalism.
				Residents	Adult & Child	Ingestion Dermal Contact Inhalation of VOCs and Particulates	On-Site	None None None	At present, the site does not serve as a residential property.
				Site Workers	Adult	Ingestion Dermal Contact Inhalation of VOCs and Particulates	On-Site	None None None	The site's industrial operations have been abandoned. Therefore, there are no site workers currently at the site.
				Construction Workers	Adult	Ingestion Dermal Contact Inhalation of VOCs and Particulates	On-Site	None None None	Construction work involving excevation activity is not currently in progress at the site.

Scenario meframe	Medium	Exposure Medium	Exposure Point	Receptor Population	Receptor	Exposure Route	On-Site/ Off-Site	Type of Analysis	Rationale for Selection or Exclusion of Exposure Pathway
Current	Soll	Subsurface Soil	Attentic Development Corp. Horseshoe Road Drum Dump Seyreville Pesticide Dump Attentic Resources Corp.	Area Residents (Trespassers)	Youth	Ingestion Dermal Contact Inhalation of VOCs and Particulates	On-Site	None None None	Construction work involving excavation activity is not currently in progress at the site. Therefore, no subsurface soil is accessible for contact.
				Residents	Adult & Child	Ingestion Dermal Contact Inhalation of VOCs and Particulates	On-Site	None None None	Construction work involving excavation activity is not currently in progress at the site. Therefore, no subsurface soil is accessible for contact.
				Site Workers	Adult	Ingestion Dermal Contact Inhalation of VOCs and Particulates	On-Site	None None None	Construction work involving excavation activity is not currently in progress at the site. Therefore, no subsurface soil is accessible for contact.
				Construction Workers	Adult	Ingestion Dermal Contact Inhalation of VOCs and Particulates	On-Site	None None None	Construction work involving excavation activity is not currently in progress at the site. Therefore, no subsurface soil is accessible for contact.

Scenerio	Medium	Exposure	Exposure	Receptor	Receptor	Exposure	On-Site/	Type of	Rationale for Selection or Exclusion
imetrame		Medium	Point	Population	Age	Route	Off-Site	Analysis	of Exposure Pathway
Current	Building	Building	Atlantic Development Corp.	Area Residents	Adult	Ingestion	On-Site	Quant	The site is not currently used for industry. The facility has some minor
1	Materials	Materials	Atlantic Resources Corp.	(Trespassers)	& Child	Dermal Contact		Quant*	institutional controls to prevent entry to the site. However, entry has occurred
1					1	Inhalation of	1	Qual**	as evidenced by vandalism.
}	İ					Particulates			
}			Ti.	Residents	Adult	Ingestion	On-Sitte	None	At present, the site does not serve as a residential property.
ļ				, Addition is	& Child	Dermal Contact	OIF SILE	None	The present, are also decented on the an a residential property.
						Inhalation of		None	
}				İ		Particulates			
ì	1				†	Parocolaiss		1	
				Site Workers	Adult	Ingestion	On-Site	None	The site's industrial operations have been abandoned. Therefore, there are
l				ŀ		Dermal Contact	{	None	no site workers currently at the site.
				1	[i	Inhelation of		None	
ĺ						Particulates			
				Construction	Adult	Ingestion	On-Site	None	Construction work involving excevation activity is not currently in progress
				Workers		Dermal Contact		None	at the site.
1			•			Inhelation of		None	
1				1		Particulates			

Scenario imetrame	Medium	Exposure Medium	Exposure Point	Receptor Population	Receptor	Exposure Route	On-Site/ Off-Site	Type of Analysis	Rationale for Selection or Exclusion of Exposure Pathway				
Current	Groundwater	Groundwater	Aquifer	Residents	Adult	Ingestion	On-Site	None	At present, the site does not serve as a residential area. Groundwater from				
-	0.0202			1	& Child	Dermal Contact	& Off-Site	None	the site is not a potable source of drinking water for residents.				
						Inhalation of VOCs		None					
				Site Workers	Adult	Ingestion	On-Site	None	The site's industrial operations have been abandoned. Therefore, there are				
				ĺ		Dermal Contact		None	no site workers currently at the site.				
						Inhalation of VOCs		None					
				Construction	Adult	Ingestion	On-Site	None	Construction work is not currently in progress at the site.				
1				Workers		Dermal Contact		None					
						Inhalation of VOCs		None					
				Ì	1	and Particulates		1					

TABLE 1
SELECTION OF EXPOSURE PATHWAYS
HORSESHOE ROAD COMPLEX SITE, SAYREVILLE, NEW JERSEY

Scenario	Medium	Exposure	Exposure	Receptor	Receptor	Exposure	On-Site/	Type of	Retionale for Selection or Exclusion
lmeframe		Medium	Point	Population	Age	Route	Off-Site	Analysis	of Exposure Pathway
Current	Surface	Surface	Raritan River	Area Residents	Youth	Ingestion	On-Site	Quant	Trespassers may incidentally ingest and demailly contact surface water in
Į.	Water	Water	Drafting Pond	(Trespassers)		Dermal Contact		Quant	the Raritan River, drafting pond, drainage channels and wetlands.
			Drainage Channels		ĺ	Inhalation of VOCs		Qual**	Exposure to VOCs released from surface water into ambient air will be
			Wetlands						qualitatively evaluated.
Current	Surface	Shellfish	Raritan River	Residents	Adult	Ingestion	Off-site	Quant	Residents may ingest shellfish caught in the Raritan River that have been
	Water								potentially impacted by site contaminants released into surface water.
Current	Sediment	Sediment	Raritan River	Area Residents	Youth	Ingestion	On-Site	Quant	Trespassers may incidentally ingest and dermally contact sediment in
]	Drafting Pond	(Trespassers)		Dermal Contact		Quant*	the Raritan River, drafting pond, drainage channels and wetlands.
			Drainage Channels			Inhalation of		Qual**	Exposure to particulates released from sediment into ambient air will be
		1	Wetlands	}	\	Particulates			qualitatively evaluated.

Scenario Imeframe	Medium	Exposure Medium	Exposure Point	Receptor Population	Receptor Age	Exposure Route	On-Site/ Off-Site	Type of Analysis	Rationale for Selection or Exclusion of Exposure Pathway
Future	Soll	Surface Soll	Attentic Development Corp. Horseshoe Road Drum Dump Sayreville Pesticide Dump Attentic Resources Corp.	Area Residents (Trespessors)	Youth	Ingestion Dermal Contact Inhalation of VOCs and Particulates	On-Site	Quant Quant* Qual**	The site may be redeveloped for commercial/industrial uses. Trespassing by area residents may occur.
				Residents	Adult & Child	Ingestion Dermal Contact Inhalation of VOCs and Particulates	On-Site	None None	The site will remain as commercial/industrial in the future.
				Site Workers	Adult	Ingestion Dermal Contact Inhalation of VOCs and Particulates	On-Sitte	Quant Quant* Qual**	The site may be redeveloped for commercial/industrial uses and workers may conduct activities in outside areas.
				Construction Workers	Adult	Ingestion Dermal Contact Inhalation of VOCs and Particulates	On-Site	Quant Quant* Qual**	Future construction activities may occur on the site. Potential exposures are expected to be short-term (i.e., six months)

Scenario	Medium	Exposure	Exposure :	Receptor	Receptor	Exposure	On-Sitte/	Type of	Rationale for Selection or Exclusion
meframe		Medium	Point	Population	Age	Route	Off-Site	Analysis	of Exposure Pathway
Future	Soil	Subsurface	Attentic Development Corp.	Area Residents	Youth	Ingestion	On-Site	Quant	The alte may be redeveloped for commercial/industrial uses. Trespassing
1		Soil	Horseshoe Road Drum Dump	(Trespassors)	1	Dermal Contact		Quant*	by area residents may occur. Exposure to subsurface solls may occur, if
İ			Sayreville Pesticide Dump			Inhalation of VOCs		Qual**	excavation activities are conducted.
}			Atlantic Resources Corp.			and Particulates			
				Residents	Adult	Ingestion	On-Site	None	The site will remain as commercial/industrial in the future.
}		1			& Child	Dermal Contact		None	
- [Inhalstion of VOCs		None	
Ì						and Particulates			
				Site Workers	Adult	Ingestion	On-Site	Quant	The site may be redeveloped for commercial/industrial uses and workers
İ					1	Dermal Contact		Quant	may be exposed to subsurface soils if excavation activities are conducted.
					l	Inhalation of VOCs		Qual**	
						and Particulates			
				Construction	Adult	Ingestion	On-Site	Quent	Future construction activities may occur on the site. Potential exposures
				Workers	1	Dermal Contact		Quant*	to construction workers are expected to be short-term (i.e., six months).
					1	Inhalstion of VOCs		Qual**	
İ					1	and Particulates			

Scenario	Medium	Exposure	Exposure	Receptor	Receptor	Exposure	On-Site/	Type of	Rationale for Selection or Exclusion
imetrame		Medium	Point	Population	Age	Route	Off-Site	Analysis	of Exposure Pathway
Future	Building	Building	Attantic Development Corp.	Area Residents	Youth	Ingestion	On-Site	Quant	The site may be redeveloped for commercial/industrial uses. Trespassing
,	Materials	Materials	Atlantic Resources Corp.	(Trespassers)		Dermal Contact	İ	Quant*	by area residents may occur.
						Inhalation of		Qual**	
						Particulates .			
				Residents	Adult	Ingestion	On-Sitte	None	The site may be theoretically developed for residential purposes. However,
ļ					& Child	Dermai Contact	ļ	None	it is assumed that the present buildings would not be used as residences.
İ			•			Inhalation of	! !	None	
] 				Particulates			
				Site Workers	Adult	Ingestion	On-Site	Quant	The site may be redeveloped for commercial/industrial uses and workers
						Dermal Contact		Quant*	may be exposed to building materials, if the present buildings are used.
ļ						Inhalation of		Qual**	
						Particulates			
ļ			H.	Construction	Adult	Ingestion	On-Site	Quant	Construction work inside the present site buildings may occur.
1				Workers		Dermal Contact		Quant*	
				1		Inhalation of		Qual**	
1				1	j j	Particulates .	ì	1	

TABLE 1
SELECTION OF EXPOSURE PATHWAYS
HORSESHOE ROAD COMPLEX SITE, SAYREVILLE, NEW JERSEY

Point Population Aquifer Residents Site Workers	Age Adult & Child	Route Ingestion Dermal Contact Inhalation of VOCs	Off-Site On-Site & Off-Site	None None None	of Exposure Pathway If the site is residentially developed in the future, it is not likely that water supply wells will be installed in the site's aquifer, since there is not sufficient
	& Child	Dermal Contact		None	supply wells will be installed in the site's aquifer, since there is not sufficient
			& Off-Site		
Site Workers		Inhalation of VOCs		None	
Site Workers			1		yield in the aquifer to support a well.
) SND TOUNDS	Adult	Ingestion	On-Site	None	If the site is commercially industrially developed in the future, it is not likely
		Dermal Contact		None	water supply wells will be installed in the site's aquifer, since there is not
		Inhalation of VOCs		None	sufficient yield in the squifer to support a well.
Construction	Adult	Ingestion	On-Site	None	If the site is commercially findustrially developed in the future, it is not likely
Workers	J	Dermal Contact		None	water supply wells will be installed in the site's aquifer, since there is not
]	Ì	Inhalation of VOCs	·	None	sufficient yield in the aquifer to support a well.
		and Particulates			
	Workers	Workers	Inhelation of VOCa	Inhelation of VOCs	Inhalation of VOCa None

TABLE 1
SELECTION OF EXPOSURE PATHWAYS
HORSESHOE ROAD COMPLEX SITE, SAYREVILLE, NEW JERSEY

Scenario	Medium	Exposure	Exposure	Receptor	Receptor	Exposure	On-Site/	Type of	Rationale for Selection or Exclusion
imeframe		Medium	Point	Population	Age	Route	Off-Site	Analysis	of Exposure Pathway
Future	Surface	Surface	Raritan River	Area Residents	Youth	Ingestion	On-Site	Quant	Trespassers may incidentally ingest and dermally contact surface water in
1	Water	Water	Orafting Pond	(Trespassers)	[Dermal Contact		Quant	the Raritan River, drafting pond, drainage channels and wetlands.
1			Drainage Channels			Inhalation of VOCs		Qual**	Exposure to VOCs released from surface water into ambient air will be
			Wetlands					}	qualitatively evaluated.
			Raritan River	Residents	Adult	Ingestion	On-Site	Quant	If is possible that the areas along the Raritan River will be developed into a
			Wetlands		& Child	Dermal Contact		Quent	public area, including a boardwalk, park, and retail shops.
1						Inhalation of VOCs		Qual**	Exposure to VOCs released from surface water into embient air will be
		1							qualitatively evaluated.
Future	Surface	Shellfish	Raritan River	Residents	Adult	Ingestion	Off-site	Quant	Residents may ingest shellfish caught in the Raritan River that have been
	Water			į				ļ	potentially impacted by site contaminants released into surface water.
Future	Sediment	Sediment	Raritan River	Area Residents	Youth	Ingestion	On-Site	Quant	Trespessers may incidentally ingest and dermally contact sediment in
			Drafting Pond	(Trespessers)		Dermal Contact		Quant*	the Raritan River, drafting pond, drainage channels and wetlands.
			Drainage Channels	1	ļ	Inhalation of		Qual**	Exposure to particulates released from sediment into ambient air will be
			Wetlends	1		Particulates			qualitatively evaluated
			Raritan River	Residents	Adult	Ingestion	On-Site	Quant	If is possible that the areas along the Raritan River will be developed into a
)			Wetlands		& Child	Dermal Contact		Quant*	public area, including a boardwalk, park, and retail shops.
-						Inhalation of		Qual**	Exposure to particulates released from sediment into ambient sir will be
]				1		Particulates			qualitatively evaluated.

^{*} The dermal contact pathway for soil and sediment at the site can only be quantitatively evaluated for arsenic, cadmium, chlordane, DDT, TCDD (dioxin), PAHs (benzo(a)pyrene, PCBs (Aroctor 1254 and 1242), pentachlorophenol, generic default SVOCs, and inorganics. Region it currently provided dermal absorption factors for these chemicals. All other chemicals will be qualifatively discussed.

^{**} The inhalation of VOCs and particulates pathways were eliminated from the risk assessment based on the results of the chemical concentration-toxicity screens performed for sits media in the various areas of concern and the chemicals of potential concern selected. The majority of COCs were nonvolatiles (PAHs, pesticides, PCBs, and inorganics)

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TABLE 2.1 OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN HORSESHOE ROAD COMPLEX SITE

	Scenario Timeframe:
ı	Medium:
1	Exposure Medium:
	Exposure Point:

		2		r Portoniaties et et et et et et et et et et et et et				mada ili ili								
		(1)		(1)							(2)	(3				(4
CAS	Chemical	Minimum	Minimum	Meadmum	Meximum	Units	Location	Detection	Range of	Concentration		Screening)	Potential	Potential	COPC	Rutionale for
Number		Concentration	Qualifier	Concentration	Clueffer		of Maximum	Frequency	Detection	Used for	Value	Toxicity Value	ARAR/TBC	ARAR/TBC	Fleg	Conteminent
							Concentration		Limits	Screening		}	Value	Source		Deletion
							The area in the		e america		THE					or Selection
Not Appl	icable - See Apps	indix A (Sum	mary of C	ontaminants	in Enviro	HIMM	ntal Media, Aj	pendix B	(Concen	ration-Toxic	ity Screens), a	nd Appendix	C (Chemica	i Contamin	ents o	(Concern)
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- (1) Minimum/meximum detected concentration.
- (2) N/A Refer to supporting information for background discussion.
 Background values derived from statistical enalysis. Follow Regional guidance and provide supporting information.
- (3) Provide reference for screening toxicity value.
- (4) Rationale Codes Selection Reason: Infrequent Detection but Associated Historically (HIST)

Frequent Detection (FD)

+++++ Toxicity Information Available (TX)

Above Screening Levels (ASL)

Deletion Reason: Infrequent Detection (IFD)

Beciground Levels (BKG)
No Toxicity Information (NTX)
Essential Nutrient (NUT)
Below Screening Level (BSL)

Definitions: N/A = Not Applicable

SQL = Sample Quantitation Limit

COPC = Chemical of Potential Concern

ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered

MCL = Federal Maximum Conteminent Level

SMCL = Secondary Maximum Conteminant Level

J = Estimated Value

C = Carcinogenic

N = Non-Carcinogenic

TABLE 3.1
MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY
HORSESHOE ROAD COMPLEX SITE, SAYREVILLE, NEW JERSEY

Scenario Timeframe: Current and Future

Medium: Surface Soll
Exposure Medium: Surface Soil
Exposure Point: AOC 1 - HRDD

Chemical of	Units	Arithmetic Mean	95% UCL of Normal	Maximum Detected	Maximum Qualifier	EPC Units	Re	asonable Maximur	m Exposure	Central Tendency		
Potential			Data	Concentration			Medium	Medium	Medium	Medium	Medium EPC	Medium
Concern	ļ						EPC	EPC	EPC	EPC		EPC
		L		*	ere ere eregre vira alatak ada		Value	Statistic	Rationale	Value	Statistic	Rationale
Dieldrin	ug/kg	24	N/A (3)	120	NJ .	ug/kg	120	Max	(1)	24	Mean-N	(2)
Aroclor-1248	ug/kg	1678	N/A (3)	9500	NJD	ug/kg	9500	Max	(1)	1678	Mean-N	(2)
Aroclor-1254	ug/kg	396	N/A (3)	850	J	ug/kg	850	Max	(1)	396	Mean-N	(2)
Aroclor-1260	ug/kg	207	N/A (3)	720	DJ	ug/kg	720	Max	(1)	207	Mean-N	(2)
Numinum	mg/kg	7803	N/A (3)	14800		mg/kg	14250	95% UCL-T	(3)	6975	Mean-T	(3)
Antimony	mg/kg	2.1	N/A (3)	3.4	BNJ	mg/kg	3.4	Max	(1)	2.1	Mean-N	(2)
Arsenic	mg/kg	33	N/A (3)	68	•1	mg/kg	∫ 53	95% UCL-T	(3)	30	Mean-T	(3)
Cadmium	mg/kg	2.3	N/A (3)	4.5		mg/kg	4.5	Max	(1)	2.3	Mean-N	(2)
Copper	mg/kg	186	N/A (3)	433	*J	mg/kg	433	Max	(1)	186	Mean-N	(2)
Vanganese	mg/kg	155	N/A (3)	420	NJ	mg/kg	420	Max	(1)	155	Mean-N	(2)
Nickel	mg/kg	44	N/A (3)	108	ļ	mg/kg	108	Max	(1)	44	Mean-N	(2)
Silver	mg/kg	16	N/A (3)	30		mg/kg	30	Max	(1)	16	Mean-N	(2)
hallium	mg/kg	0.63	N/A (3)	1 1	В	mg/kg	1	Max	(1)	0.63	Mean-N	(2)
/anadium	mg/kg	40	N/A (3)	78		mg/kg	64	95% UCL-T	(3)	37	Mean-T	(3)

Statistics: Maximum Detected Value (Max); 95% UCL of Normal Data (95% UCL-N); 95% UCL of Log-transformed Data (95% UCL-T); Mean of Log-transformed Data (Mean-T); Mean of Normal Data (Mean-N).

- (1) 95% UCL exceeds maximum detected concentration. Therefore, maximum concentration used for EPC.
- (2) 95% UCL exceeds maximum detected concentration. Therefore, arithmetic average concentration used for EPC.
- (3) Data assumed to be log normally distributed.

TABLE 3.1 MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY HORSESHOE ROAD COMPLEX SITE, SAYREVILLE, NEW JERSEY

Scenario Timeframe: Current and Future

Medium: Surface Soil

Exposure Medium: Surface Soil
Exposure Point: AOC 2 - ADC

Chemical of	Units	Arithmetic Mean	95% UCL of Normal	Maximum Detected	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure			Central Tendency		
Potential Concern			Deta	Concentration			Medium EPC Value	Medium EPC	Medium EPC Rationale	Medium EPC	Medium EPC Statistic	Medium EPC Rationale
are a non-position au n		<u> </u>						Statistic		Value		
Benzo(a)anthracene	ug/kg	4534	N/A (3)	21000	J	ug/kg	21000	Max	(1)	4534	Mean-N	(2)
Benzo(b)fluoranthene	ug/kg	7841	N/A (3)	30000		ug/kg	30000	Max	(1)	7841	Mean-N	(2)
Benzo(a)pyrene	ug/kg	5343	N/A (3)	20000	ı	ug/kg	20000	Mex	(1)	5343	Mean-N	(2)
Indeno(1,2,3-cd)pyrene	ug/kg	3251	N/A (3)	12000		ug/kg	12000	Max	(1)	3251	Mean-N	(2)
Dibenzo(a,h)anthracene	ng/kg	2532	N/A (3)	2300		ug/kg	2300	Max	(1)	2532	Mean-N	(2)
Aldrin	Ug/kg	114	N/A (3)	400	NJ	ug/kg	400	Max	(1)	114	Mean-N	(2)
Dieldrin	ug/kg	200	N/A (3)	740	J	ug/kg	740	Max	(1)	200	Mean-N	(2)
Methoxychlor	ug/kg	72823	N/A (3)	980000	JD	ug/kg	980000	Max	(1)	72823	Mean-N	(2)
Aroclor-1248	ug/kg	7359	N/A (3)	34000	JD	ug/kg	34000	Max	(1)	7359	Mean-N	(2)
Aroclor-1260	ug/kg	1500	N/A (3)	2500	NJ I	ug/kg	2500	Max	(1)	1500	Mean-N	(2)
2,3,7,8-TCDD equiv.	ug/kg	0.15	N/A (3)	0.308	ļ	ug/kg	0.308	Max	(1)	0.15	Mean-N	(2)
Antimony	mg/kg	10	N/A (3)	84.1	NJ	mg/kg	32	95% UCL-T	(3)	2.7	Mean-T	(3)
\rsenic	mg/kg	426	N/A (3)	3640		mg/kg	3640	95% UCL-T	(3)	46	Mean-T	(3)

Statistics: Maximum Detected Value (Max); 95% UCL of Normal Data (95% UCL-N); 95% UCL of Log-transformed Data (95% UCL-T); Mean of Log-transformed Data (Mean-T);

Mean of Normal Data (Mean-N).

- (1) 95% UCL exceeds maximum detected concentration. Therefore, maximum concentration used for EPC.
- (2) 95% UCL exceeds maximum detected concentration. Therefore, arithmetic average concentration used for EPC.
- (3) Data assumed to be log normally distributed.

TABLE 3.1 MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY HORSESHOE ROAD COMPLEX SITE, SAYREVILLE, NEW JERSEY

Scenario Timeframe: Current and Future

Medium: Surface Soil

Exposure Medium: Surface Soil Exposure Point: AOC 3 - SPD

Chemical of	Units	Arithmetic Mean	95% UCL of Normal	Maximum Detected	Maximum Qualifier	EPC Units	Re	easonable Maximur	n Exposure	Central Tendency		
Potential		1	Data	Concentration			Medium	Medium	Medium	Medium	Medium	Medium
Concern		(l (EPC	EPC	EPC	EPC	EPC	EPC
	. 						Value	Statistic	Rationale	Value	Statistic	Rationale
lenzo(a)anthracene	no _v a	959	N/A (3)	7300	J	ug/kg	1701	95% UCL-T	(3)	388	Mean-T	(3)
lenzo(b)fluoranthene	ug/kg	998	N/A (3)	7700	J	ug/kg	2883	95% UCL-T	(3)	337	Mean-T	(3)
lenzo(a)pyrene	ug/kg	797	N/A (3)	6500	J	ug/kg	1468	95% UCL-T	(3)	324	Mean-T	(3)
ndeno(1,2,3-cd)pyrene	ug/kg	704	N/A (3)	4000	J	ug/kg	1302	95% UCL-T	(3)	369	Mean-T	(3)
lethoxychior	ug/kg	50976	N/A (3)	650000	JO	ug/kg	650000	Max	(1)	50976	Mean-N	(2)
Juminum	mg/kg	5036	N/A (3)	14200	Ì	mg/kg	8432	95% UCL-T	(3)	4024	Mean-T	(3)
ntimony	mg/kg	4.0	N/A (3)	23	į	mg/kg	17	95% UCL-T	(3)	1.6	Mean-T	(3)
rsenic	mg/kg	13	N/A (3)	32		mg/kg	24	95% UCL-T	(3)	10	Mean-T	(3)
Copper	mg/kg	308	N/A (3)	2210		mg/kg	1519	95% UCL-T	(3)	96	Mean-T	(3)
langanese	mg/kg	95	N/A (3)	326		mg/kg	215	95% UCL-T	(3)	58	Mean-T	(3)
hallium	mg/kg	0.73	N/A (3)	1.3	В	mg/kg	0.92	95% UCL-T	(3)	0.68	Mean-T	(3)
anadium	mg/kg	30	N/A (3)	49		mg/kg	37	95% UCL-T	(3)	28	Mean-T	(3)

Statistics: Maximum Detected Value (Max/); 95% UCL of Normal Data (95% UCL-N); 95% UCL of Log-transformed Data (95% UCL-T); Mean of Log-transformed Data (Mean-T); Mean of Normal Data (Mean-N).

- (1) 95% UCL exceeds maximum detected concentration. Therefore, maximum concentration used for EPC.
- (2) 95% UCL exceeds maximum detected concentration. Therefore, arithmetic average concentration used for EPC.
- (3) Data assumed to be log normally distributed.

TABLE 3.1

MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY
HORSESHOE ROAD COMPLEX SITE, SAYREVILLE, NEW JERSEY

Scenario Timeframe: Current and Future

Medium: Surface Soil

Exposure Medium: Surface Solf Exposure Point: AOC 4 - ARC

Chemical of	Units	Arithmetic Mean	95% UCL of Normal	Maximum Detected	Maximum Qualifier	EPC Units	Re	easonable Maximur	• • • • • • • • • • • • • • • • • • • •	Central Tendency		
Potential			Data	Concentration			Medium	Medium	Medium	Medium	Medium	Medium
Concern		}		1	•		EPC	EPC	EPC	EPC	EPC	EPC
rttern Leenlaad eerlikkin oo otto elis oo oo oo oo		ļ <u>.</u>		* * ***** * * *			Value	Statistic	Rationale	Value	Statistic	Rationale
Benzo(b)fluoranthene	ug/kg	1694	N/A (3)	2600		ug/kg	2600	Max	(1)	1694	Mean-N	(2)
Benzo(a)pyrene	ug/kg	1640	N/A (3)	1800	J	ug/kg	1800	Max	(1)	1640	Mean-N	(2)
lexachlorobutadiene	ug/kg	1879	N/A (3)	6800	J	n ū ykā	6800	Max	(1)	1879	Mean-N	(2)
Hexachlorocyclopentadiene	ug/kg	22720	N/A (3)	340000	JD	ug/kg	57440	95% UCL-T	(3)	846	Mean-T	(3)
Aldrin	ug/kg	37	N/A (3)	570	NJD	ug/kg	22	95% UCL-T	(3)	1.6	Mean-T	(3)
Aroctor-1248	ug/kg	937	N/A (3)	15000	JD	ug/kg	891	95% UCL-T	(3)	43	Mean-T	(3)
Aroclor-1254	ug/kg	753	N/A (3)	10000	ECJ	ug/kg	1941	95% UCL-T	(3)	62	Mean-T	(3)
Aroclor-1260	ug/kg	348	N/A (3)	5000	JD	ug/kg	465	95% UCL-T	(3)	44	Mean-T	(3)
2,3,7,8-TCCD equiv.	ug/kg	0.12	N/A (3)	0.20		ug/kg	0.2	Max	(1)	0.12	Mean-N	(2)
Aluminum	mg/kg	6918	N/A (3)	15500		mg/kg	15500	Max	(1)	6918	Mean-N	(2)
Antimony	mg/kg	6.5	N/A (3)	23		mg/kg	18	95% UCL-T	(3)	3.5	Mean-T	(3)
Arsenic	mg/kg	12	N/A (3)	30		mg/kg	27	95% UCL-T	(3)	9.7	Mean-T	(3)
Cadmium	mg/kg	8.4	N/A (3)	103		mg/kg	37	95% UCL-T	(3)	1.3	Mean-T	(3)
Copper	mg/kg	174	N/A (3)	591		mg/kg	591	Max	(1)	174	Mean-N	(2)
Manganese	mg/kg	123	N/A (3)	461		rng/kg	461	Max	(1)	123	Mean-N	(2)
Nickel	mg/kg	62	N/A (3)	507	j	mg/kg	296	95% UCL-T	(3)	21	Mean-T	(3)
Silver	mg/kg	66	N/A (3)	287	NJ	mg/kg	287	Max	(1)	66	Mean-N	(2)
[hallium	mg/kg	0.59	N/A (3)	1.7	В	mg/kg	0.72	95% UCL-T	(3)	0.53	Mean-T	(3)
Zinc .	mg/kg	2016	N/A (3)	31400	N*EJ	mg/kg	9172	95% UCL-T	(3)	108	Mean-T	(3)

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Statistics: Maximum Detected Value (Max); 95% UCL of Normal Data (95% UCL-N); 95% UCL of Log-transformed Data (95% UCL-T); Mean of Log-transformed Data (Mean-T); Mean of Normal Data (Mean-N).

- (1) 95% UCL exceeds maximum detected concentration. Therefore, maximum concentration used for EPC.
- (2) 95% UCL exceeds maximum detected concentration. Therefore, arithmetic average concentration used for EPC.
- (3) Data assumed to be log normally distributed.

TABLE 3.2

MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY
HORSESHOE ROAD COMPLEX SITE, SAYREVILLE, NEW JERSEY

Scenerio Timeframe: Future Medium: Subsurface Soll Exposure Medium: Subsurface Soll Exposure Point: AOC 1 - HRDD

Chemical of	Units	Arithmetic Mean	95% UCL of Normal	Meximum Detected	Meximum Qualifier	Cuelifier Units Medium Medium Medium Medium Medium]]		Central Tendency			
Potential	į		Data	Concentration						Medium	Medium	Medium
Concern	1						EPC	EPC	EPC			
				ļ <u></u>					Rationale	Value	Statistic	Rationale
roctor-1248	ug/kg	341	N/A (3)	1300	D	ug/kg	1300	Меж	(1)	341	Mean-N	(2)
Vroctor-1254	ug/kg	40	N/A (3)	96		ug/kg	96	Mex	(1)	40	Mean-N	(2)
Vroctor-1280	ug/kg	787	N/A (3)	3100	D	ug/kg	3100	Max	(1)	787	Mean-N	(2)
Vundnum	mg/kg	8282	N/A (3)	11800	•	mg/kg	10685	95% UCL-T	(3)	8056	Mean-T	(3)
Viitimony	mg/kg	1.5	N/A (3)	5.1	BNJ	mg/kg	5.1	Max	(1)	1.5	Mean-N	(2)
Vrseni c	mg/kg	14.7	N/A (3)	27.1		mg/kg	24.5	95% UCL-T	(3)	13.5	Mean-T	(3)
Cadmium	mg/kg	2.1	N/A (3)	5.1		mg/kg	4.4	95% UCL-T	(3)	1.8	Meen-T	(3)
Copper	mg/kg	402	N/A (3)	1222		mg/kg	1222	Max	(1)	402	Mean-N	(2)
langanese	mg/kg	244	N/A (3)	486	•	mg/kg	486	Max	(1)	244	Mean-N	(2)
äckel	mg/kg	50	N/A (3)	174		mg/kg	174	Max	(1)	50	Mean-N	(2)
hellum	mg/kg	0.93	N/A (3)	2.5		mg/kg	2.5	Mex	(1)	0.93	Mean-N	(2)
enedium	mg/kg	38.3	N/A (3)	50		mg/kg	50	Mex	(1)	38.3	Mean-N	(2)

Statistics: Maximum Detected Value (Maxi); 95% UCL of Normal Data (95% UCL-N); 95% UCL of Log-transformed Data (95% UCL-T); Mean of Log-transformed Data (Mean-T); Mean of Normal Data (Mean-N).

- (1) 95% UCL exceeds maximum detected concentration. Therefore, maximum concentration used for EPC.
- (2) 95% UCL exceeds maximum detected concentration. Therefore, arithmetic everage concentration used for EPC.
- (3) Data assumed to be log normally distributed.

Scenario Timeframe: Future Medium: Test Pit Soil

Exposure Medium: Test Pit Soil
Exposure Point: AOC1 - HRDD-TP

Chemical of	Units	Arithmetic Mean	95% UCL of Normal	Maximum Detected	Meximum Qualifler	EPC Units		sesonable Mexim	•		Central Ter	ndency
Potential	i	i	Deta	Concentration			Medium	Medium	Medium	Medium	Medium	Medium
Concern							EPC	EPC	EPC	EPC	EPC	EPC
	.	l			المنتاج المرازين	l	Value	Statistic	Rationale	Value	Statistic	Rationale
Benzo(a)pyrene	ug/kg	517	N/A (3)	3300	J	ug/kg	1346	95% UCL-T	(3)	184	Mean-T	(3)
Aroctor-1248	ug/kg	3882	N/A (3)	41000		ug/kg	41000	Max	(1)	3882	Mean-N	(2)
Aroctor-1254	ug/kg	1105	N/A (3)	6200		ug/kg	6200	Max	(1)	1105	Meen-N	(2)
Vitimony	mg/kg	150	N/A (3)	2000		mg/kg	1308	95% UCL-T	(3)	3.2	Mean-T	(3)
Vrsenic	mg/kg	106	NA (3)	853	NJ	mg/kg	707	95% UCL-T	(3)	33	Mean-T	(3)

Statistics: Maximum Detected Value (Max); 95% UCL of Normal Data (95% UCL-N); 95% UCL of Log-transformed Data (95% UCL-T); Mean of Log-transformed Data (Mean-T); Mean of Normal Data (Mean-N).

- (1) 95% UCL exceeds maximum detected concentration. Therefore, maximum concentration used for EPC.
- (2) 95% UCL exceeds maximum detected concentration. Therefore, arithmetic everage concentration used for EPC.
- (3) Data assumed to be log normally distributed.

TABLE 3.2

MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY
HORSESHOE ROAD COMPLEX SITE, SAYREVILLE, NEW JERSEY

Scenario Tirreframe: Future Medium: Subsurface Soll

Exposure Medium: Subsurface Soil Exposure Point: AOC 2 - ADC

Chemical of	Units	Arithmetic Mean	95% UCL of Normal	Maximum Detected	Maximum Qualifier	EPC Units	Re	sasonable Maximur	•		Central Tend	ency
Potential			Deta	Concentration			Medium	Medium	Medium	Medium	Medium	Medium
Concern							EPC	EPC	EPC	EPC	EPC	EPC
					والمعجودات المرازي		Value	Statistic	Rationale	Value	Statistic	Rationale
2-Dichloroethane	ug/kg	26703	N/A (3)	390000	D	ug/kg	390000	Mex	(1)	26703	Mean-N	(2)
enzo(b)fluoranthene	ug/kg	2128	N/A (3)	30000	J	ug/kg	3149	95% UCL-T	(3)	490	Mean-T	(3)
enzo(a)pyrene	ug/kg	2143	N/A (3)	26000	J	ug/kg	4713	95% UCL-T	(3)	563	Mean-T	(3)
lethoxychior	ug/kg	64833	N/A (3)	780000	JO	ug/kg	780000	Max	(1)	64833	Mean-N	(2)
roctor-1242	ug/kg	2610	N/A (3)	17000	JO.	ug/kg	10538	95% UCL-T	(3)	76.8	Mean-T	(3)
roctor-1248	ug/kg	7261	NA (3)	74000	J	ug/kg	74000	Max	(1)	7261	Meen-N	(2)
rsenic	mg/kg	130	N/A (3)	1120	J	mg/kg	828	95% UCL-T	(3)	21	Mean-T	(3)
helitum	mg/kg	1.3	N/A (3)	3.5	BJ	mg/kg	1.8	95% UCL-T	(3)	1.0	Mean-T	(3)

Statistics: Maximum Detected Value (Maxi); 95% UCL of Normal Data (95% UCL-N); 95% UCL of Log-transformed Data (95% UCL-T); Mean of Log-transformed Data (Mean-T); Mean of Normal Data (Mean-N).

- (1) 95% UCL exceeds maximum detected concentration. Therefore, maximum concentration used for EPC.
- (2) 95% UCL exceeds maximum detected concentration. Therefore, arithmetic average concentration used for EPC.
- (3) Data assumed to be log normally distributed.

Scenario Timetrame: Future Medium: Subsurface Soil

Exposure Medium: Subsurface Soil
Exposure Point: AOC 3 - SPD

Chemical of	Units	Arithmetic Mean	95% UCL of Normal	Meximum Detected	Maximum Qualifler	EPC Units	\\	esonable Madmu	•		Central Tend	ency
Potential		1	Data	Concentration			Medium	Medium	Medium	Medium	Medium	Medium
Concern							EPC	EPC	EPC	EPC	EPC	EPC
		ļ.,					Value	Statistic	Retionale	Value	Statistic	Rationale
erizo(a)pyrane	ug/kg	341	N/A (3)	93	J	ug/kg	93	Max	(1)	93	Max	(4)
roctor-1254	ug/kg	77	N/A (3)	450	-	ug/kg	164	95% UCL-T	(3)	36	Mean-T	(3)
vocior-1260	ug/kg	78	N/A (3)	400		ug/kg	176	95% UCL-T	(3)	36	Mean-T	(3)
lethoxychlor	ug/kg	2241	N/A (3)	18000	JD	ug/kg	18000	Mex	(1)	2241	Meen-N	(2)
luminum	mg/kg	5287	N/A (3)	16400	J	mg/kg	9082	95% UCL-T	(3)	4106	Mean-T	(3)
ntimony	mg/kg	0.62	N/A (3)	1.9	В	mg/kg	0.83	95% UCL-T	(3)	0.54	Mean-T	(3)
rsenic	mg/kg	8.6	N/A (3)	33.6	N	mg/kg	29	95% UCL-T	(3)	5.0	Mean-T	(3)
admium	mg/kg	0.4	N/A (3)	1.5		mg/kg	0.67	95% UCL-T	(3)	0.22	Mean-T	(3)
langanese	mg/kg	63	N/A (3)	435	•	mg/kg	197	95% UCL-T	(3)	23	Mean-T	(3)
hallum	mg/kg	0.8	N/A (3)	2.8		rng/kg	1.2	95% UCL-T	(3)	0.65	Mean-T	(3)
enedium	mg/lqg	25.1	N/A (3)	50.3		mg/kg	33	95% UCL-T	(3)	23	Mean-T	(3)

Statistics: Maximum Detected Value (Max); 95% UCL of Normal Data (95% UCL-N); 95% UCL of Log-transformed Data (95% UCL-T); Mean of Log-transformed Data (Mean-T); Mean of Normal Data (Mean-N).

- (1) 95% UCL expeeds maximum detected concentration. Therefore, maximum concentration used for EPC.
- (2) 95% UCL exceeds maximum detected concentration. Therefore, arithmetic everage concentration used for EPC.
- (3) Data assumed to be log normally distributed.
- (4) Mean concentration exceeds the maximum concentration, due to high detection limits for nondetects.

Scenario Timeframe: Future

Medium: Test Pit Soll

Exposure Medium: Test Pil Soll Exposure Point: AOC 3 - SPD-TP

Chemical of	Units	Arithmetic Mean	95% UCL of Normal	Maximum Detected	Meximum Qualifier	EPC Units		esonable Maximur	n Exposure		Central Tend	lency
Potential			Data	Concentration			Medium	Medium	Medium	Medium	Medium	Medium
Concern				,			EPC	EPC	EPC	EPC	EPC	EPC
					***	,	Value	Statistic _	Rationale	Value	Statistic	Retionale
exachioroethene	ug/kg	1300000	N/A (3)	25000000	JO	ug/kg	10201148	95% UCL-T	(3)	1751	Meen-T	(3)
lenzo(a)pyrene	ug/kg	2000	N/A (3)	4700	j	ug/kg	4700	Max	(1)	2000	Meen-N	(2)
Mberizo(a,h)enthracene	ug/kg	1794	N/A (3)	920	J	ug/kg	920	Max	(1)	920	Max	(4)
vocior-1248	ug/kg	3331	N/A (3)	21000		ug/kg	21000	Max	(1)	3331	Meen-N	(2)
voctor-1254	ug/kg	764	N/A (3)	6000	J	ug/kg	6000	Max	(1)	764	Mean-N	(2)
vsenic	mg/kg	21.5	N/A (3)	77.2	*EJ	mg/kg	77.2	Max	(1)	21,5	Mean-N	(2)
opper	mg/kg	3502	N/A (3)	32300	"EJ	mg/kg	32300	Max	(1)	3502	Mean-N	(2)

Statistics: Maximum Detected Value (Max); 95% UCL of Normal Data (95% UCL-N); 95% UCL of Log-transformed Data (95% UCL-T); Mean of Log-transformed Data (Mean-T); Mean of Normal Data (Mean-N).

- (1) 95% UCL exceeds maximum detected concentration. Therefore, maximum concentration used for EPC.
- (2) 95% UCL exceeds resolution detected concentration. Therefore, arithmetic average concentration used for EPC.
- (3) Data assumed to be log normally distributed.
- (4) Mean concentration exceeds the maximum concentration, due to high detection limits for nondetects.

TABLE 3.2

MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY
HORSESHOE ROAD COMPLEX SITE, SAYREVILLE, NEW JERSEY

Scenario Timeframe: Future
Medium: Subsurface Soll
Exposure Medium: Subsurface Soll
Exposure Point: AOC 4 - ARC

Chemical of	Units	Arithmetic Mean	95% UCL of Normal	Meximum Detected	Maximum Qualifler	EPC Units	1	esonable Maximur	•		Central Tend	lency
Potential		Ì	Data	Concentration			Medium	Medium	Medium	Medium	Medium	Medium
Concern		1	1				EPC	EPC	EPC .	EPC	EPC	EPC
		ļ			· · · · · · · · · · · · · · · · · · ·		Value	Statistic	Rationale	Value	Statistic	Rationale
Tetrachioroethene	ug/kg	1434	N/A (3)	23000		ug/kg	19252	95% UCL-T	(3)	29.9	Mean-T	(3)
Chlorobenzene	ug/kg	4593	N/A (3)	80000		ug/kg	29736	95% UCL-T	(3)	35	Mean-T	(3)
Benzo(a)anthracene	ug/kg	521	N/A (3)	2250	j	ug/kg	793	95% UCL-T	(3)	351	Mean-T	(3)
Benzo(b)fluoranthene	ug/kg	556	N/A (3)	2550	J	ug/kg	830	95% UCL-T	(3)	380	Mean-T	(3)
Benzo(a)pyrene	ug/kg	523	N/A (3)	1950	J	ug/kg	767	95% UCL-T	(3)	374	Mean-T	(3)
ndeno(1,2,3-cd)pyrene	ug/kg	478	N/A (3)	1150	J	ug/kg	693	95% UCL-T	(3)	363	Mean-T	(3)
,2,4-Trichiorobenzene	ug/kg	35440	N/A (3)	600000	JO	ug/kg	112687	95% UCL-T	(3)	832	Meen-T	(3)
Aktrin	ug/kg	5	N/A (3)	53	NJD	ug/kg	5.7	95% UCL-T	(3)	1.6	Mean-T	(3)
Vroctor-1248	ug/kg	128	N/A (3)	1600	JD	ug/kg	149	95% UCL-T	(3)	34	Meen-T	(3)
Vroctor-1254	ug/kg	42	N/A (3)	130	J	ug/kg	56	95% UCL-T	(3)	28	Mean-T	(3)
Numinum	mg/kg	8615	N/A (3)	20200		mg/kg	13018	95% UCL-T	(3)	7140	Meen-T	(3)
Villimony	mg/kg	1.4	NA (3)	3.4	В	mg/kg	2.1	95% UCL-T	(3)	1.1	Mean-T	(3)
Vrsenic	mg/kg	9.3	N/A (3)	18.5		mg/kg	13.0	95% UCL-T	(3)	7.8	Mean-T	(3)
Aangenese	mg/kg	70	N/A (3)	183	NJ	mg/kg	133	95% UCL-T	(3)	46	Mean-T	(3)
Triellium	mg/kg	0.92	NA (3)	2.2	8	mg/kg	1.1	95% UCL-T	(3)	0.82	Mean-T	(3)
anedium	mp/kg	34.7	N/A (3)	53.9		mg/kg	43	95% UCL-T	(3)	32	Mean-T	(3)

Statistics: Maximum Detected Value (Maxi); 95% UCL of Normal Data (95% UCL-N); 95% UCL of Log-transformed Data (95% UCL-T); Mean of Normal Data (Mean-N).

- (1) 95% UCL exceeds maximum detected concentration. Therefore, maximum concentration used for EPC.
- (2) 95% UCL exceeds maximum detected concentration. Therefore, arithmetic average concentration used for EPC.
- (3) Data assumed to be log normally distributed.

Scenario Timeframe: Current and Future

Medium: Surface Water

Exposure Medium: Surface Water Exposure Point: AOC 1 - HRDD

Chemical of	Units	Arithmetic Mean	95% UCL of Normal	Maximum Detected	Maximum Qualifier	EPC Units		asonable Maxim	•		Central Tend	lency
Potential	i		Data	Concentration			Medium	Médium	Medium	Medium	Medium	Medium
Concern	I I			!		ļ	EPC	EPC	EPC	EPC	EPC	EPC
 	1.1.						Value	Statistic	Rationale	Value	Statistic	Rationale
inyl Chloride	ug/l	5	N/A (3)	4	J	ug/ī	4	Max	(1)	4	Max	(4)
vitimony	ug/I	8	N/A (3)	10	В	ug/i	10	Max	(1)	8	Mean-N	(2)
Vrsenic .	ug/I	46	N/A (3)	89.6		ug/I	89.6	Max	(1)	46	Mean-N	(2)
Cadmium	ug/l	6	N/A (3)	8.5		ug/1	8.5	Max	(1)	6.1	Mean-N	(2)
Copper	ug/l	780	N/A (3)	1230	EJ	ug/l	1230	Max	(1)	780	Mean-N	(2)
fanganese	ug/l	880	N/A (3)	1030	EJ	ug/l	1030	Mex	(1)	880	Mean-N	(2)
lickei	ug/t	136	N/A (3)	144		l ug/l	144	Mex	(1)	136	Mean-N	(2)

Statistics: Maximum Detected Value (Max); 95% UCL of Normal Data (95% UCL-N); 95% UCL of Log-transformed Data (95% UCL-T); Mean of Log-transformed Data (Mean-T); Mean of Normal Data (Mean-N).

- (1) 95% UCL exceeds maximum detected concentration. Therefore, maximum concentration used for EPC.
- (2) 95% UCL exceeds maximum detected concentration. Therefore, arithmetic average concentration used for EPC.
- (3) Data assumed to be log normally distributed.
- (4) Mean concentration exceeds the maximum concentration, due to high detection limits for nondetects.

TABLE 3.3
MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY
HORSESHOE ROAD COMPLEX SITE, SAYREVILLE, NEW JERSEY

Scenerio Timetrame: Current and Future

Medium: Surface Water

Exposure Medium: Surface Water Exposure Point: AOC 2 - ADC

Chemical of	Units	Arithmetic Mean	95% UCL of Normal	Meximum Detected	Maximum Qualifier	EPC Units		easonable Maximu			Central Tend	•
Potential	İ		Date	Concentration			Medium	Medium	Medium	Medium	Medium	Medium
Concern	- 1			\ \ \		•	EPC	EPC	EPC	EPC	EPC	EPC
		ļ					Value	Statistic	Rationale	Value	Statistic	Rationale
Anyi Chloride	ug/i	7.6	N/A (3)	36		ug/i	9.8	95% UCL-T	(3)	5.9	Mean-T	(3)
Antimony	ug/1	6.1	N/A (3)	34.5	JB	ug/l	9.6	95% UCL-T	(3)	3.7	Mean-T	(3)
Arsenic	ug/l	83	N/A (3)	467	NJ	ug/l	467	Max	(1)	83	Mean-N	(2)
Manganese	ug/i	320	N/A (3)	919	J	ug/t	673	95% UCL-T	(3)	245	Mean-T	(3)
Theilium	ug/l	1.9	N/A (3)	3.9	JB	ug/l	2.3	95% UCL-T	(3)	1.8	Mean-T	(3)

Statistics: Maximum Detected Value (Max); 95% UCL of Normal Data (95% UCL-N); 95% UCL of Log-transformed Data (95% UCL-T); Mean of Log-transformed Data (Mean-T); Mean of Normal Data (Mean-N).

- (1) 95% UCL exceeds maximum detected concentration. Therefore, maximum concentration used for EPC.
- (2) 95% UCL exceeds maximum detected concentration. Therefore, arithmetic average concentration used for EPC.
- (3) Data assumed to be log normally distributed.

Scenario Timeframe: Current and Future

Medium: Surface Water

Exposure Mediurit: Surface Water Exposure Point: AOC 3 - SPD

Chemical of	Units	Arithmetic Mean	95% UCL of Normal	Maximum Detected	Maximum Qualifler	EPC Units		asonable Maximu	•		Central Tend	lency
Potential	ļ		Deta	Concentration			Medium	Medium	Medium	Medium	Medium	Medium
Concern	İ						EPC	EPC	EPC	EPC	EPC	EPC
							Value	Statistic	Rationale	Value	Statistic	Retionale
lethoxychior	ug/l	0.63	N/A (3)	0.91	J	ug/l	0.91	Max	(1)	0.63	Mean-N	(2)
Numbum	ug/1	1311	N/A (3)	2610		ug/l	2610	Mex	(1)	1311	Mean-N	(2)
Vrsenic	ug/1	6.2	N/A (3)	9.9	J/B	ug/l	9.9	Max	(1)	6.2	Mean-N	(2)
Copper	ug/l	120	N/A (3)	247	EJ	ug/l	247	Max	(1)	120	Mean-N	(2)
Aanganese	ug/l	861	N/A (3)	919	j	ug/l	919	Max	(1)	661	Mean-N	(2)
/anadium	ug/I	4.9	N/A (3)	7.4	В	ug/l	7.4	Max	(1)	4.9	Mean-N	(2)

Statistics: Maximum Detected Value (Max); 95% UCL of Normal Data (95% UCL-N); 95% UCL of Log-transformed Data (95% UCL-1); Mean of Log-transformed Data (Mean-T); Mean of Normal Data (Mean-N).

- (1) 95% UCL exceeds maximum detected concentration. Therefore, maximum concentration used for EPC.
- (2) 95% UCL exceeds maximum detected concentration. Therefore, crithmetic everage concentration used for EPC.
- (3) Data assumed to be log normally distributed.

Scenario Timeframe: Current and Future

Medium: Surface Water

Exposure Medium: Surface Water Exposure Point: AOC 4 - ARC

Chemical of	Units	Arithmetic Mean	95% UCL of Normal	Maximum Detected	Maximum Quelifier	EPC Units	Re	easonable Maximur	n Exposure		Central Tend	lency
Potential	}		Data	Concentration			Medium	Medium	Medium	Medium	Medium	Medium
Concern		į.	i	Į Į			EPC	EPC	EPC	EPC	EPC	EPC
		 					Value	Statistic	Rationale	Value	Statistic	Rationale
Antimony	ug/1	16	N/A (3)	94		ug/l	92	95% UCL-T	(3)	6.2	Mean-T	(3)
Arsenic	ug/l	6.0	N/A (3)	18	NJ	ug/i	13	95% UCL-T	(3)	4.5	Mean-T	(3)
Cadmium	ug/l	3.2	N/A (3)	8.5	В	ug/l	8.5	Max	(1)	3.2	Mean-N	(2)
Copper	ug/1	286	N/A (3)	1230	EJ	ug/t	1230	Max	(1)	286	Mean-N	(2)
Aanganese	ug/l	239	N/A (3)	730		ug/l	730	Max	(1)	239	Mean-N	(2)
lickel	ug/I	37	N/A (3)	128	J	ug/l	128	Max	(1)	37	Mean-N	(2)
#Wer	ug/l	11	N/A (3)	51		ug/l	38	95% UCL-T	(3)	6.7	Mean-T	(3)

Statistics: Maximum Detected Value (Max); 95% UCL of Normal Data (95% UCL-N); 95% UCL of Log-transformed Data (95% UCL-T); Mean of Log-transformed Data (Mean-T); Mean of Normal Data (Mean-N).

- (1) 95% UCL exceeds miximum detected concentration. Therefore, maximum concentration used for EPC.
- (2) 95% UCL exceeds maximum detected concentration. Therefore, arithmetic average concentration used for EPC.
- (3) Data assumed to be log normally distributed.

Scenario Timeframe: Current and Future

Medium: Surface Water

Exposure Medium: Surface Water Exposure Point: AOC 5 - DSM

Cherrical of	Units	Arithmetic Mean	95% UCL of Normal	Maximum Detected	Maximum Qualifier	EPC Units	Re	esonable Maxii	тит Ехровите		Central †er	ndency
Potential			Data	Concentration			Medium	Medium	Médium	Medium	Medium	Medium
Concern							EPC	EPC	EPC -	EPC	EPC	EPC
	<u> </u>						Value	Statistic	Rationale	Value	Stetlistic	Rationale
Arsenic	ug/t	552	N/A (3)	569		ug/l	569	Max	(1)	552	Mean-N	(2)
Mangenese	ug/l	1170	(E) AVA	1190	EJ	ug/1	1190	Max	(1)	1170	Mean-N	(2)
Į.							<u> </u>					

Statistics: Maximum Detected Válue (Maxi); 95% UCL of Normal Data (95% UCL-N); 95% UCL of Log-transformed Data (95% UCL-T); Mean of Log-transformed Data (Mean-T); Mean of Normal Data (Mean-N).

- (1) 95% UCL exceeds maximum detected concentration. Therefore, maximum concentration used for EPC.
- (2) 95% UCL exceeds maximum detected concentration. Therefore, arithmetic average concentration used for EPC.
- (3) Date assumed to be log normally distributed.

TABLE 3.3
MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY
HORSESHOE ROAD COMPLEX SITE, SAYREVILLE, NEW JÉRSEY

Scenerio Timeframe: Current and Future

Medium: Surface Water

Exposure Medium: Surface Water Exposure Point: ACC 6 - RR

Chemical of	Units	Arithmetic Mean	95% UCL of Normal	Maximum Detected	Maximum Qualifier	EPC Units	Re	asonable Maximi	ит Ехровите		Central Tend	tency
Potential			Deta	Concentration			Medium	Medium	Medium	Medium	Medium	Medium
Concern	1		ļ				EPC	EPC	EPC	EPC	EPC	EPC
						1	Value	Statistic	Rationale	Value	Statistic	Rationale
luminum	ug/1	956	N/A (3)	2310	J	ug/1	2310	Max	(1)	956	Mean-N	(2)
ntimony	ug/i	3.5	NA (3)	5.7	8	ug/l	5.7	Max	(1)	3.5	Mean-N	(2)
rsenic	ug/1	11	N/A (3)	20		ug/l	20	Max	(1)	11	Mean-N	(2)
opper	uģ/I	165	N/A (3)	249	EJ	ug/l	249	Max	(1)	165	Mean-N	(2)
langanese	ug/I	87	N/A (3)	101	EJ	ug/l	101	Max	(1)	87	Mean-N	(2)
halilum	ug/t	2.7	N/A (3)	5	В	ug/l	5	Max	(1)	2.7	Mean-N	(2)
nedium	ug/l	7.7	N/A (3)	18.6	В	ug/l	18.6	Max	(1)	7.7	Mean-N	(2)

Statistics: Maximum Detected Value (Max); 95% UCL of Normal Data (95% UCL-N); 95% UCL of Log-transformed Data (95% UCL-T); Mean of Log-transformed Data (Mean-T); Mean of Normal Data (Mean-N).

- (1) 95% UCL exceeds miximum detected concentration. Therefore, maximum concentration used for EPC.
- (2) 95% UCL exceeds maximum detected concentration. Therefore, arithmetic everage concentration used for EPC.
- (3) Data assumed to be tog normally distributed.

TABLE 3.4

MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY

HORSESHOE ROAD COMPLEX SITE, SAYREVILLE, NEW JERSEY

Scenario Timeframe: Current and Future

Medium: Sediment

Exposure Medium: Sediment
Exposure Point: AOC 1 - HRDD

Cherrical	Units	1	95% UCL of	Maximum	Maximum	EPC	Red	esoneble Maximu	m Exposure		Central Tend	ency
of	}	Mean	Normal	Detected	Qualifier	Units	N	r Lanado To			1 11 5 5 1	:: 1
Potential			Date	Concentration			Medium	Medium	Medium	Medium	Medium	Medium
Concern	1	1					EPC	EPC	EPC	EPC	EPC	EPC
		ļ		ļ 			Value	Statistic	Rationale	Value	Statistic	Rationale
lenzo(a)anthracene	ug/kg	190	N/A (3)	61	J	ug/kg	61	Max	(1)	61	Max	(4)
lenzo(b)fluoranthene	ug/kg	183	N/A (3)	140	JX	ug/kg	140	Max	(1)	140	Max	(4)
lenzo(a)pyrene	ug/kg	173	N/A (3)	71	J	ug/kg	71	Max	(1)	71	Max	(4)
ndeno(1,2,3-cd)pyrene	ug/kg	214	N/A (3)	64	J	ug/kg	64	Max	(1)	64	Max	(4)
roctor-1254	ug/kg	103	N/A (3)	300	J	ug/kg	300	Max	(1)	103	Mean-N	(2)
ntimony	mg/kg	7.5	N/A (3)	21.4	BNJ	mg/kg	21.4	Mex	(1)	7.5	Mean-N	(2)
rsenic	mg/kg	309	N/A (3)	1110	NJ .	mg/kg	1110	Max	(1)	309	Mean-N	(2)
Copper	mg/kg	1215	N/A (3)	5300		mg/kg	5300	Max	(1)	1215	Mean-N	(2)
lengenese	mg/kg	817	N/A (3)	2080		mg/kg	2080	Max	(1)	817	Mean-N	(2)
hellum	mg/kg	1.2	N/A (3)	3.3	BJ	mg/kg	3.3	Max	(1)	3.2	Meen-N	(2)

Statistics: Maximum Detected Value (Max); 95% UCL of Normal Data (95% UCL-N); 95% UCL of Log-transformed Data (95% UCL-T); Mean of Log-transformed Data (Mean-T); Mean of Normal Data (Mean-N).

N/A - Not Applicable.

- (1) 95% UCL exceeds maximum detected concentration. Therefore, maximum concentration used for EPC.
- (2) 95% UCL exceeds maximum detected concentration. Therefore, arithmetic average concentration used for EPC.
- (3) Data assumed to be log normally distributed.
- (4) Mean concentration exceeds the maximum concentration, due to high detection limits for nondetects.

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Scenario Timeframe: Current and Future

Medium: Sediment

Exposure Medium: Sediment Exposure Point: AOC 2 - ADC

Chemical of	Units	Arithmetic Mean	95% UCL of Normal	Medmum Detected	Meximum Qualifier	EPC Units	Re	esonable Maxim	•		Central Tend	dency
Potential			Data	Concentration			Medium	Medium	Medium	Medium	Medium	Medium
Concern						,	EPC	EPC	EPC	EPC	EPC	EPC
on need an or the state of the							Value	Statistic	Rationale	Value	Statistic	Rationale
Вепго(а)рутеле	ug/kg	1241	N/A (3)	10000	J	ug/kg	6002	95% UCL-T	(3)	395	Mean-T	(3)
Methoxychior	ug/kg	56556	N/A (3)	640000	JD	ug/kg	640000	Max	(1)	56556	Mean-N	(2)
Arsenic (mg/kg	669	N/A (3)	3480	NJ	ma/kg	3480	Max	(1)	669	Mean-N	(2)

Statistics: Maximum Detected Value (Max); 95% UCL of Normal Data (95% UCL-N); 95% UCL of Log-transformed Data (95% UCL-T); Mean of Log-transformed Data (Mean-T); Mean of Normal Data (Mean-N).

- (1) 95% UCL exceeds maximum detected concentration. Therefore, maximum concentration used for EPC.
- (2) 95% UCL exceeds maximum detected concentration. Therefore, arithmetic everage concentration used for EPC.
- (3) Data assumed to be log normally distributed.

TABLE 3.4

MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY
HORSESHOE ROAD COMPLEX SITE, SAYREVILLE, NEW JERSEY

Scenario Timeframe: Current and Future

Medium: Sediment

Exposure Medium: Sediment Exposure Point: AOC 3 - SPD

Chemical of	Units	Arithmetic Mean	95% UCL of Normal	Meximum Detected	Maximum Qualifler	EPC Units	Red	asonable Maximu	m Exposure		Central Tend	ency
Potential	}	İ	Data	Concentration			Medium	Medium	Medium	Medium	Medium	Medium
Concern		Į,					EPC	EPC	EPC	EPC	EPC	EPC
						0 -0 -0	Value	Statistic	Rationale	Value	Statistic	Rationale
enzo(b)fkioranthene	ug/kg	497	NA (3)	910	.bx	ug/kg	910	Mex	(1)	497	Mean-N	(2)
lenzo(a)pyrene	ug/kg	350	N/A (3)	630	J	ug/kg	630	Max	(1)	350	Mean-N	(2)
Obenzo(a,h)anthracene	ug/kg	240	N/A (3)	130	J	ug/kg	130	Mex	(1)	130	Mex	(4)
vochlor 1254	ug/kg	953	N/A (3)	68	a	ug/kg	68	Max	(1)	68	Mex	(4)
leptachilor	ug/kg	79	N/A (3)	220	J (ug/kg	220	Mex	(1)	79	Mean-N	(2)
lethoxychior	ug/kg	56567	N/A (3)	130000	D	ug/kg	130000	Max	(1)	56537	Mean-N	(2)
iuminum	mg/kg	9643	N/A (3)	13600	EJ	mg/kg	13600	Max	(1)	9643	Mean-N	(2)
ntimony	mg/kg	1.3	N/A (3)	2.3	BNJ	mg/kg	2.3	Max	(1)	1.3	Mean-N	(2)
rsenic	mg/kg	13.7	N/A (3)	21.8		mg/kg	21.8	Max	(1)	13.7	Mean-N	(2)
Copper	mg/kg	334	N/A (3)	816		mg/kg	816	Max	(1)	334	Mean-N	(2)
langanese	mg/kg	154	N/A (3)	282		mg/kg	282	Mex	(1)	154	Mean-N	(2)
anedium	mg/kg	42	N/A (3)	47.9	в	mg/kg	47.9	Mex	(1)	42	Meen-N	(2)

Statistics: Madrium Detected Value (Mag; 95% UCL of Normal Data (95% UCL-N); 95% UCL of Log-transformed Data (95% UCL-T); Mean of Log-transformed Data (Mean-T); Mean of Normal Data (Mean-N).

- (1) 95% UCL exceeds maximum detected concentration. Therefore, maximum concentration used for EPC.
- (2) 95% UCL exceeds maximum detected concentration. Therefore, arithmetic average concentration used for EPC.
- (3) Data assumed to be log normally distributed.
- (4) Mean concentration exceeds the maximum concentration, due to high detection limits for nondetects.

Scenario Timeframe: Current and Future

Medium: Sediment

Exposure Medium: Sediment
Exposure Point: AOC 4 - ARC

Chemical	Units	Arkhmetic	95% UCL of	! !	Meximum	EPC	Re	sesonable Meximus	n Exposure		Central Tend	ency
of Detector		Woen	Normal	Detected	Qualifier	Units		1			,	
Potential	- 1		Data	Concentration			Medium	Medium	Medium	Medium	Medium	Medium
Concern				!	1		EPC	EPC	EPC	EPC	EPC	EPC
		ļ			· ************************************	avitt ottoriotiisi	Value _	Statistic	Rationale	Value	Statistic	Rationale
Benzo(a)pyrene	ug/kg	711	NA (3)	1000		ug/kg	1000	Max	(1)	711	Mean-N	(2)
Dieldrin	ug/kg	20	N/A (3)	180	NJ .	ug/kg	41	95% UCL-T	(3)	4.2	Mean-T	(3)
Vroctor-1248	ug/kg	303	N/A (3)	2100		ug/kg	2100	Mex	(1)	303	Mean-N	(2)
Arocior-1254	ug/kg	5003	N/A (3)	57500	D	ug/kg	57500	Max	(1)	5003	Mean-N	(2)
Vroctor-1260	ug/lgg	254	N/A (3)	2100	JD	ug/kg	2100	Mex	(1)	254	Mean-N	(2)
2,3,7,8-TCCD equiv.	ug/kg	0.04	N/A (3)	0.08	J	ug/kg	0.08	Mex	(1)	0.04	Mean-N	(2)
Intimony	mg/kg	6.4	N/A (3)	26	NJ	mg/kg	26	Max	(1)	6.4	Mean-N	(2)
Vrseni c	mg/kg	20	N/A (3)	49	N	mg/kg	49	Mex	(1)	20	Mean-N	(2)
Copper	mg/kg	411	N/A (3)	2350		mg/kg	1493	95% UCL-T	(3)	202	Mean-T	(3)
liliver	mg/kg	52	N/A (3)	321		mg/kg	321	Mex	(1)	52	Moan-N	(2)

Statistics: Maximum Detected Value (Maxi); 95% UCL of Normal Data (95% UCL-N); 95% UCL of Log-transformed Data (95% UCL-T); Mean of Log-transformed Data (Mean-T);

Mean of Normal Data (Mean-N).

- (1) 95% UCL exceeds maximum detected concentration. Therefore, maximum concentration used for EPC.
- (2) 95% UCL exceeds maximum detected concentration. Therefore, arithmetic average concentration used for EPC.
- (3) Data assumed to be log normally distributed.

TABLE 3.4
MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY
HORSESHOE ROAD COMPLEX SITE, SAYREVILLE, NEW JERSEY

Scenario Timeframe: Current and Future

Medium: Sediment

Exposure Medium: Sediment Exposure Point: AOC 5 - DSM

Chemical of	Units	Arithmetic	95% UCL of Normal	Meximum Detected	Meximum Qualifier	EPC Units	Re	esonable Maxim.	ım Exposure		Central Tend	lency
Potential			Deta	Concentration	Casalor		Medium	Medium	Medium	Medium	Medium	Medium
Concern	İ					ĺ	EPC	EPC	EPC	EPC	EPC	EPC
	-			F 5.275 7 0			Value	Statistic	Rationale	Value	Statistic	Rationale
enzo(a)enthracene	ug/kg	450	N/A (3)	300	j	ug/kg	300	Mex	(1)	300	Mex	(4)
enzo(b)fluoranthene	ug/tg	407	N/A (3)	730	XL.	ug/kg	730	Mex	(1)	407	Mean-N	(2)
епдо(а)рутеле	ug/kg	460	N/A (3)	300	J	ug/kg	300	Mex	(1)	300	Mex	(4)
ndeno(1,2,3-cd)pyrene	ug/kg	437	N/A (3)	220	J	ug/kg	220	Max	(1)	220	Max	(4)
roctor-1254	ug/lgg	387	N/A (3)	470	J	ug/kg	470	Max	(1)	387	Mean-N	(2)
rsenic	mg/kg	1917	N/A (3)	4030	NJ	mg/kg	4030	Mex	(1)	1917	Mean-N	(2)

Statistics: Maximum Detected Value (Max); 95% UCL of Normal Data (95% UCL-N); 95% UCL of Log-transformed Data (95% UCL-T); Mean of Log-transformed Data (Mean-T); Mean of Normal Data (Mean-N).

- (1) 95% UCL exceeds maximum detected concentration. Therefore, maximum concentration used for EPC.
- (2) 95% UCL exceeds maximum detected concentration. Therefore, arithmetic average concentration used for EPC.
- (3) Data assumed to be log normally distributed.
- (4) Mean concentration exceeds the maximum concentration, due to high detection limits for nondetects.

Scenario Timeframe: Current and Future

Medium: Sediment

Exposure Medium: Sediment Exposure Point: AOC 6 - RR

Chemical of	Units	Arithmetic Mean	95% UCL of Normal	Meximum Detected	Maximum Qualifler	EPC Units	Red	esonable Maxin	num Exposure		Central Ten	dency
Potentiel Concern			Data	Concentration			Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale	Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
Arsenic Copper	mg/kg mg/kg	450 1573	N/A (3) N/A (3)	2200 3560	J •J	mg/kg mg/kg	2200 3560	Max Max	(1) (1)	450 1573	Mean-N Mean-N	(2) (2)

Statistics: Maximum Detected Value (Max); 95% UCL of Normal Data (95% UCL-N); 95% UCL of Log-transformed Data (95% UCL-T); Mean of Log-transformed Data (Mean-T); Mean of Normal Data (Mean-N).

- (1) 95% UCL exceeds maximum detected concentration. Therefore, maximum concentration used for EPC.
- (2) 95% UCL exceeds maximum detected concentration. Therefore, enthrmetic average concentration used for EPC.
- (3) Data assumed to be log normally distributed.

Scenario Timeframe Current and Future

Medium: Building Materials

Exposure Medium Building Materials

Exposure Point AOC 2 - ADC

Chemical of	Units	Arithmetic Mean	95% UCL of Normal	Maximum Detected	Maximum Qualifier	EPC Units	Res	asonable Maximu	m Exposure		Central Ten	dency
Potential	1	}	Deta	Concentration			Medium	Medium	Medium	Medium	Medium	Medium
Concern				<u> </u>			EPC	EPC	EPC	EPC	EPC	EPC
r us io vegi von e		<u></u>			rentar i tr		Value	Statistic	Rationale	Value	Statistic	Rationale
Benzo(a)anthracene	ug/kg	468143	N/A (3)	1100000	EJ	u g/ kg	1100000	Max	(1)	468143	Mean-N	(2)
Benzo(b)fluoranthene	ug/kg	540875	N/A (3)	1400000	Ε	ug/kg	1400000	Max	(1)	540875	Mean-N	(2)
Benzo(a)pyrene	ug/kg	426620	N/A (3)	1100000	E	ug/kg	1100000	Max	(1)	426620	Mean-N	(2)
ndeno(1,2,3-cd)pyrene	ug/kg	147910	N/A (3)	300000	J	ug/kg	300000	Max	(1)	147910	Mean-N	(2)
Dibenzo(a,h)anthracene	ug/kg	42438	N/A (3)	90000	J	ug/kg	90000	Max	(1)	42438	Mean-N	(2)
Naphthalene	ug/kg	100988	N/A (3)	320000		u g/ kg	320000	Max	(1)	100988	Mean-N	(2)
2-Methylnaphthalene	ug/kg	498113	N/A (3)	1100000		ug/kg	1100000	Max	(1)	498113	Mean-N	(2)
Acenaphthene	ug/kg	355888	N/A (3)	800000	E	ug/kg	800000	Max	(1)	355888	Mean-N	(2)
Dibenzofuran	ug/kg	398113	N/A (3)	1000000	ED	ug/kg	1000000	Max	(1)	398113	Mean-N	(2)
luorene	ug/kg	583363	N/A (3)	1600000	E	ug/kg	1600000	Max	(1)	583363	Mean-N	(2)
Fluoranthene	ug/kg	1833535	N/A (3)	3900000	JD	ug/kg	3900000	Max	(1)	1833525	Mean-N	(2)
Pyrene	ug/kg	1411478	N/A (3)	2800000	JD	ug/kg	2800000	Max	(1)	1411478	Mean-N	(2)
Vethoxychior	ug/kg	37714	N/A (3)	150000	D	ug/kg	150000	Max	(1)	37714	Mean-N	(2)
Antimony	mg/kg	3.7	N/A (3)	5.7	BNJ	mg/kg	5.7	Max	(1)	37	Mean-N	(2)
Arsenic	mg/kg	46	N/A (3)	84	•EJ	mg/kg	84	Max	(1)	46	Mean-N	(2)
Copper	mg/kg	253	N/A (3)	495	•	mg/kg	495	Max	(1)	253	Mean-N	(2)
Vlanganese	mg/kg	239	N/A (3)	495		mg/kg	495	Max	(1)	239	Mean-N	(2)
Thallium	mg/kg	0.9	N/A (3)	1.8	В	mg/kg	18	Max	(1)	09	Mean-N	(2)
?inc	mg/kg	981	N/A (3)	3050	•	mg/kg	3050	Max	(1)	981	Mean-N	(2)

Statistics: Maximum Detected Value (Max), 95% UCL of Normal Data (95% UCL-N), 95% UCL of Log-transformed Data (95% UCL-T), Mean of Log-transformed Data (Mean-T), Mean of Normal Data (Mean-N).

- (1) 95% UCL exceeds maximum detected concentration. Therefore, maximum concentration used for EPC.
- (2) 95% UCL exceeds maximum detected concentration. Therefore, arithmetic average concentration used for EPC.
- (3) Data assumed to be log normally distributed

Scenario Timeframe Current and Future
Mediuch: Building Materials
Exposure Medium: Building Materials
Exposure Point: AOC 4 - ARC

Chemical of	Units	Arithmetic Mean	95% UCL of Normal	Maximum Detected	Maximum Qualifier	EPC Units	ij.	asonable Maxim	,		Central Te	,
Potential	Į		Deta	Concentration			Medium	Medium	Medium	Medium	Medium	Medium
Concern			l	[EPC	EPC	EPC	EPC	EPC	€bC
Arrest Same		ļ				errorrorror di en	Value	Statistic	Rationale	Value	Statistic	Rationale
Aroclor-1254	ug/kg	5599	N/A (3)	30000	QL,	ug/kg	30000	Max	(1)	5599	Mean-N	(2)
	•	3.2	N/A (3)	17		ug/kg	17	Max	(1)	32	Mean-N	(2)
,3;7,8-TCDD equiv.	ug/kg	Į J.Z						1		Į.		
2,3;7,8-TCDD equiv. Antimony	ug/kg mg/kg	9017	N/A (3)	31700	NJ	mg/kg	31700	Max	(1)	9017	Mean-N	(2)

Statistics: Maximum Detected Value (Max); 95% UCL of Normal Data (95% UCL-N); 95% UCL of Log-transformed Data (95% UCL-T), Mean of Log-transformed Data (Mean-T); Mean of Normal Data (Mean-N)

- (1) 95% UCL exceeds maximum detected concentration. Therefore, maximum concentration used for EPC
- (2) 95% UCL exceeds maximum detected concentration. Therefore, arithmetic average concentration used for EPC.
- (3) Data assumed to be log normally distributed.

TABLE 4.1 VALUES USED FOR DAILY INTAKE CALCULATIONS HORSESHOE ROAD COMPLEX, SAYREVILLE, NEW JERSEY

Scenario Timeframe: Current and Future
Medium: Soil
Exposure Medium: Surface Soil
Exposure Point: ADC, HRRD, SPD, and ARC
Receptor Population: Area Residents (Trespessers)
Receptor Age: Youth (12-17 years)

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CT Value	CT Rationale/ Reference	Intake Equation/ Model Name
Ingestion	CS	Chemical Concentration in Soil	mg/kg	Chemspecific	-	Chem-specific	-	Chronic Daily Intake (CDI) (mg/kg/day) =
				95th UCL or Max.*	[]	Average		CS x IR x FI x EF x ED x CF1 x 1/BW x 1/AT
	IR	Ingestion rate	mg/day	100	RAGS, Part A	50	Region II	RME
	Fì '	Fraction ingested	unitiess	1	RAGS, Part A			CDI = CS x 8.0E-08 (Noncarcinogenic)
	EF	Exposure Frequency	days/yr	12	Site-specific**			CDI = CS x 5.1E-09 (Carcinogenic)
	ED	Exposure Duration	yrs	6	RAGS, Part A			CI
	CF1	Conversion factor	kg/mg	10-6	-		}	CDI = CS x 3.0E-08 (Noncarcinogenic)
	BW	Body Weight	kg	55	RAGS, Part A			CDI = CS x 2.6E-09 (Carcinogenic)
	AT-NC	Averaging Time (noncancer)	clays	2,190	RAGS, Part A	1		
	AT-C	Averaging Time (cancer)	days	25,550	RAGS, Part A			
Dermal	CS	Chemical Concentration in Soil	mg/kg	Chemspecific	-	Chemspecific	-	Chronic Daily Intake (CDI) (mg/kg/day) =
				95th UCL or Max.*		Average		CS x SA x AF x ABS x EF x ED x CF1 x 1/BW x 1/AT
	SA	Skin surface area available for contact	cm2/event	2,535	EFH, 1997			RME
	AF	Soil-to-skin adherence factor	mg/cm2	1	DEA, 1992			CDI ≈ CS x 1.5E-06 x ABS (Noncarcinogenic)
,	ABS	Absorption factor	unitless	Chemspecific****	Region II		Ì	CDI = CS x 1.3E-07 x ABS (Carcinogenic)
i	EF I	Exposure Frequency	events/yr	12	Site-specific**		•	CI
	ED	Exposure Duration	угз	6	RAGS, Part A		1	CDI = CS x 1.5E-06 x ABS (Noncarcinogenic)
'	CF1	Conversion factor	kg/mg	10-6			1	CDI = CS x 1.3E-07 x ABS (Carcinogenic)
	BW	Body Weight	kg	55	RAGS, Part A		1	
	AT-NC	Averaging Time (noncencer)	days	2,190	RAGS, Part A			
	AT- C	Averaging Time (cancer)	days	25,550	RAGS, Part A		}	

TABLE 4.2 VALUES USED FOR DAILY INTAKE CALCULATIONS HORSESHOE ROAD COMPLEX, SAYREVILLE, NEW JERSEY

Scenario Timeframe: Current and Future

Medium: Building Materials

Exposure Medium: Building Materials
Exposure Point: ADC and ARC

Receptor Population: Area Residents (Trespassers)

Receptor Age: Youth (12-17 years)

Exposure Route	Parameter	Parameter Definition	Units	RME	RME	CT	СТ	Intake Equation/
	Code		1	Value	Rationale/	Value	Rationale/	Model Name
25. 4]	Reference		Reference	
Ingestion	CBM	Chemical Concentration in Building	mg/kg	Chem -specific		Chemspecific	•	Chronic Daily Interse (CDI) (mg/kg/day) =
		Materials	£	95th UCL or Max.*		Average		CBM x IR x Fl x EF x ED x CF1 x 1/BW x 1/AT
,	IR	Ingestion rate	mg/day	100	RAGS, Part A	50	Region II	RME
İ	Fi	Fraction ingested	unitless	1	RAGS, Part A			CDI = CBM x 6.0E-08 (Noncarcinogenic)
	EF	Exposure Frequency	days/yr	12	Site-specific**			CDI = CBM x 5.1E-09 (Carcinogenic)
	ED	Exposure Duration	yrs	6	RAGS, Part A			CI
	CF1	Conversion factor	kg/mg	10-6				CDI = CBM x 3.0E-08 (Noncarcinogenic)
	BW	Body Weight	kg	55	RAGS, Part A			CDI = CBM x 2.6E-09 (Carcinogenic)
İ	AT-NC	Averaging Time (noncancer)	days	2,190	RAGS, Part A			
	AT-C	Averaging Time (cancer)	days	25,550	RAGS, Part A			
Defmal	CBM	Chemical Concentration in Building	mg/kg	Chemspecific	-	Chemspecific	-	Chronic Deily Intake (CDI) (mg/kg/day) =
		Materials	1	95th UCL or Max.*		Average		CBM x SA x AF x ABS x EF x ED x CF x 1/BW x 1/AT
	SA	Sien surface area available for contact	cm2/event	2,535	EFH, 1997			RME
	AF	Soil-to-skin adherence factor	mg/cm2	1	DEA, 1992			CDI = CBM x 1.5E-06 x ABS (Noncarcinogenic)
	ABS	Absorption factor	unitiess	Chemspecific****	Region II			CDI = CBM x 1.3E-07 x ABS (Carcinogenic)
	EF	Exposure Frequency	events/yr	12	Site-specific**			CI
	ED	Exposure Duration	угв	6	RAGS, Part A			CDI = CBM x 1.5E-08 x ABS (Noncarcinogenic)
	CF1	Conversion factor	kg/mg	10-6	-			CDI = CBM x 1.3E-07 x ABS (Carcinogenic)
	BW	Body Weight	kg	55	RAGS, Part A			
	AT-NC	Averaging Time (noncancer)	days	2,190	RAGS, Part A			
	AT-C	Averaging Time (cancer)	days	25,550	RAGS, Part A		ļ	

TABLE 4.3 VALUES USED FOR DAILY INTAKE CALCULATIONS HORSESHOE ROAD COMPLEX, SAYREVILLE, NEW JERSEY

Scenario Timeframe: Current and Future

Medium: Surface Water

AT-NC

Averaging Time (noncancer)

Averaging Time (cancer)

days

days

2,190

25,550

Exposure Medium: Surface Water

Exposure Point: HRDD, ADC, SPD, ARC, DSM, RR Receptor Population: Area Residents (Trespassers) Receptor Age: Youth (12-17 years)

Parameter Definition Exposure Route | Parameter Units RME RME CT CT Intake Equation/ Code Value Rationale/ Value Rationale/ Model Name Reference Reference Ingestion CSW Chemical Concentration in Surface Water mg/l Chem.-specific Chem.-specific Chronic Daily Intake (CDI) (mg/kg/day) = 95th UCL or Max.* CSW x CR x ET x EF x ED x 1/BW x 1/AT Average CR Vhr 0.05 RAGS, Part A Contact rate ΕŦ 0.5 Site-specific** CDI = CSW x 3.0E-05 (Noncerinogenic) Exposure Time hr/event EF CDI = CSW x 2.6E-06 (Carinogenic) **Exposure Frequency** events/yr 24 Site-specific** ED RAGS, Part A Exposure Duration yrs. BW Body Weight 55 RAGS, Part A CDI = CSW x 3.0E-05 (Noncarinogenic) AT-NC 2,190 RAGS, Part A CDI = CSW x 2.6E-06 (Carinogenic) Averaging Time (noncancer) days AT-C 25,550 RAGS, Part A Averaging Time (cancer) days Dermal CSW Chemical Concentration in Surface Water mg/l Chem.-specific Chem.-specific Chronic Deily Intake (CDI) (mg/kg/day) = 95th UCL or Max.* Average CSW x SA x PC x ET x EF x ED x CF x 1/BW x 1/AT SA Skin surface area available for contact cm2/event 920 EFH, 1997 PC DEA, 1992 CDI = CSW x 5.5E-04 x PC (Noncarinogenic) Permeability Constant cm/hr Chem.-specific ET ODI = CSW x 4.7E-05 x PC (Carinogenic) Exposure time hrs/event 0.5 Site-specific** EF Site-specific** 24 Exposure Frequency events/yr ED RAGS, Part A CDI = CSW x 5.5E-04 x PC (Noncarinogenic) Exposure Duration yrs. 6 CDI = CSW x 4.7E-05 x PC (Carinogenic) CF1 Conversion factor Vcm3 10-3 BW RAGS, Part A Body Weight kg 55

RAGS, Part A

RAGS, Part A

TABLE 4.4 VALUES USED FOR DAILY INTAKE CALCULATIONS HORSESHOE ROAD COMPLEX, SAYREVILLE, NEW JERSEY

Scenario Timeframe: Current and Future
Medium: Surface Water
Exposure Medium: Shelffish
Exposure Point: Raritan River
Receptor Population: Residents
Receptor Age: Adult

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CT Value	CT Rationale/ Reference	Intake Equation/ Model Name
Ingestion	CSF	Chemical Concentration in Shellfish	mg/kg	Chemspecific		Chemspecific	}	Chronic Daily Intake (CDI) (mg/kg/day) =
of Shellfish				95th UCL or Max.*		Average		CSF x IR x EF x ED x CF x 1/8W x 1/AT
	IR	Ingestion rate	kg/day	0.0065	RAGS, Part A	1	}	RME
	EF	Exposure Frequency	days/yr	350	RAGS, Part A			CDI = CSF x 8.9E-11 (Noncarcinogenic)
	ED	Exposure Duration	yrs	24	RAGS, Part A	9	RAGS, Part A	CDI = CSF x 3.1E-11 (Carcinogenic)
	CF	Conversion Factor	kg/mg	10-6	- 1		1	CI
	8W	Body Weight	kg	70	RAGS, Part A			CDI = CSF x 8 9E-11 (Noncarcinogenic)
	AT-NC	Averaging Time (noncancer)	days	8,760	RAGS, Part A	3,285		CDf = CSF x 1.2E-1f (Carcinogenic)
	AT-C	Averaging Time (cancer)	days	25,550	RAGS, Part A			

TABLE 4.5 VALUES USED FOR DAILY INTAKE CALCULATIONS HORSESHOE ROAD COMPLEX, SAYREVILLE, NEW JERSEY

Scenario Timeframe: Current and Future
Medium: Sediment
Exposure Medium: Sediment
Exposure Point: HRDD, ADC, SPD, SRC, DSM, RR
Receptor Population: Area Residents (Trespassers)
Receptor Age: Youth (12-17 years)

xposure Route	Parameter	Parameter Definition	Units	RME	RME	СТ	ст	Intake Equation/
	Code			Value	Rationale/	Value	Rationale/	Model Name
ಳಗೆಸಿದು ವರದ ಗಡೆಗು			1		Reference		Reference	
Ingestion	CSE	Chemical Concentration in Sediment	mg/kg	Chem -specific	. [Chemspecific	-	Chronic Daily Intake (CDI) (mg/kg/day) =
				95th UCL or Max.*		Average		CSE x IR x Fl x EF x ED x CF1 x 1/BW x 1/AT
	IR	Ingestion rate	mg/day	100	RAGS, Part A			RME
	FI	Fraction ingested	unitiess	1	RAGS, Part A			CDI = CSE x 1.2E-07 (Noncarcinogenic)
	EF	Exposure Frequency	days/yr	24	Site-specific**			CDI = CSE x 1.0E-08 (Carcinogenic)
	ED	Exposure Duration	yrs	6	RAGS, Part A]	CI
	CF1	Conversion factor	kg/mg	10-6	-			CDI = CSE x 1.2E-07 (Noncarcinogenic)
	BW	Body Weight	kg	55	RAGS, Part A			CDI = CSE x 1.0E-08 (Carcinogenic)
	AT-NC	Averaging Time (noncancer)	days	2,190	RAGS, Part A		1	
	AT- C	Averaging Time (cancer)	days	25,550	RAGS, Part A			<u> </u>
Dermal	CSE	Chemical Concentration in Sediment	mg/kg	Chemspecific	-	Chemspecific	-	Chronic Daily Intake (CDI) (mg/kg/day) =
			1	95th UCL or Max.*		Average		CSE x SA x AF x ABS x EF x ED x CF x 1/BW x 1/AT
	SA	Skin surface area available for contact	cm2/event	920	EFH 1997			RME
1	AF	Sediment-to-sign adherence factor	rng/cm2	1	DEA, 1992			CDI = CSE x 1.1E-06 x ABS (Noncarcinogenic)
	ABS	Absorption factor	unitiess	Chemspecific****	Region II			CDI = CSE x 9.4E-08 x ABS (Carcinogenic)
	EF	Exposure Frequency	events/yr	24	Site-specific**		l	CI
	ED	Exposure Duration	уга	6	RAGS, Part A			CDI = CSE x 1.1E-06 x ABS (Noncarcinogenic)
	CF1	Conversion factor	kg/mg	10-6	.			CDI = CSE x 9.4E-06 x ABS (Carcinogenic)
	BW	Body Weight	ko	55	RAGS, Part A			
	AT-NC	Averaging Time (noncancer)	days	2,190	RAGS, Part A			
	AT-C	Averaging Time (cancer)	days	25,550	RAGS, Part A		1	

TABLE 4.6 VALUES USED FOR DAILY INTAKE CALCULATIONS HORSESHOE ROAD COMPLEX, SAYREVILLE, NEW JERSEY

Scenario Timeframe: Future

Medium: Soll

Exposure Medium: Surface and Subsurface Soil
Exposure Point: ADC, HRRD, SPD, and ARC

Receptor Population: Site Workers

Receptor Age: Adult

exposure Route	Parameter	Parameter Definition	Units	RME	RME	СТ	CT	Intake Equation/
	Code		1	Value	Rationale/	Value	Rationale/	Model Name
					Reference		Reference	
Ingestion	CS	Chemical Concentration in Soil	mg/kg	Chemspecific		Chemspecific	-	Chronic Daily Intake (CDI) (mg/kg/day) =
				95th UCL or Max.*		Average		CS x IR x FI x EF x ED x CF1 x 1/BW x 1/AT
	KR	Ingestion rate	mg/day	50	RAGS, Part A	25	Region II	RME
	FI	Fraction ingested	unitiess	1	RAGS, Part A			CDI = CS x 4.9E-07 (Noncarcinogenic)
	EF	Exposure Frequency	days/yr	250	Site-specific**	185	Region II	CDI = CS x 1.8E-07 (Carcinogénic)
	ED	Exposure Duration	yrs	25	RAGS, Part A	9	RAGS, Part A	टा
	CF1	Conversion factor	kg/mg	10-6	! - [CDI = CS x 2 0E-07 (Noncarcinogenic)
	BW	Body Weight	kg	70	RAGS, Part A			CDI = CS x 2.3E-08 (Carcinogenic)
	AT-NC	Averaging Time (noncancer)	days	9,125	RAGS, Part A	3,286		
7 1184	AT-C	Averaging Time (cancer)	days	25,550	RAGS, Part A		Ì	
Dermal	CS	Chemical Concentration in Soil	mg/kg	Chemspecific	-	Chemspecific	-	Chronic Deity Intake (CDI) (mg/kg/day) =
ı			1	95th UCL or Max.*	[]	Average		CS x SA x AF x AB\$ x EF x ED x CF1 x 1/BW x 1/AT
	SA	Skin surface area available for contact	cm2/event	5,800	EFH, 1997	5,000	EFH, 1997	RME
	AF	Soil-to-skin adherence factor	mg/cm2	1	DEA, 1992		}	CDI = CS x 5.7E-05 x ABS (Noncercinogenic)
	ABS	Absorption factor	unitiess	Chemspecific****	Region II			CDI = CS x 2.0E-05 x ABS (Carcinogenic)
	EF	Exposure Frequency	eventslyr	250	Site-specific**	185	Region II	CI
	ED	Exposure Duration	yrs	25	RAG8, Part A	g	RAGS, Part A	CDI = CS x 3.6E-05 x ABS (Noncercinogenic)
	CF1	Conversion factor	kg/mg	10-6] -		ļ	CDI = CS x 4.7E-06 x ABS (Carcinogenic)
	BW	Body Weight	kg	70	RAGS, Part A			
	AT-NC	Averaging Time (noncancer)	days	9,125	RAGS, Part A	3,285		
	AT-C	Averaging Time (cancer)	days	25,550	RAGS, Part A			

TABLE 4.7 VALUES USED FOR DAILY INTAKE CALCULATIONS HORSESHOE ROAD COMPLEX, SAYREVILLE, NEW JERSEY

Scenerio Timeframe: Future
Medium: Soil
Exposure Medium: Surface and Subsurface Soil
Exposure Point: ADC, HRRD, SPD, and ARC
Receptor Population: Construction Workers
Receptor Age: Adult

exposure Route	Parameter	Parameter Definition	Units	RME	RME	СТ	ст	Intake Equation/
	Code		1	Value	Rationale/	Value	Rationale/	Model Name
					Reference		Reference	
Ingestion	cs	Chemical Concentration in Soil	mg/kg	Chemspecific	-	Chemspecific	•	Chronic Daily Intake (CDI) (mg/kg/day) =
				95th UCL or Max.*		Average		CS x IR x FI x EF x ED x CF1 x 1/BW x 1/AT
	IR	Ingestion rate	mg/day	480	RAGS, Part A			RME
	FI	Fraction ingested	unitiess	1	RAGS, Part A			CDI = CS x 1 2E-08 (Noncarcinogenic)
	EF	Exposure Frequency	days/yr	65	Site-specific**			CDI = CS x 1.7E-08 (Carcinogenic)
	ED	Exposure Duration	yrs	1	RAGS, Part A			ct
	CF1	Conversion factor	kg/mg	10-6	-			CDI = CS x 1.2E-06 (Noncarcinogenic)
	BW	Body Weight	ko	70	RAGS, Part A			CDI = CS x 1.7E-08 (Carcinogenic)
	AT-NC	Averaging Time (noncancer)	days	365	RAGS, Part A			
	AT- C	Averaging Time (cancer)	days	25,550	RAGS, Part A		_	<u>, </u>
Dermal	cs	Chemical Concentration in Soil	mg/kg	Chemspecific	- }	Chemspecific	-	Chronic Daily Intake (CDI) (mg/kg/day) =
				95th UCL or Max.*		Average		CS x SA x AF x ABS x EF x ED x CF1 x 1/BW x 1/AT
	SA	Sidn surface area available for contact	cm2/event	6,125	EFH, 1996			RME
	AF	Soll-to-skin adherence factor	mg/cm2	1	DEA, 1992			CDI = CS x 1.6E-05 x ABS (Noncarcinogenic)
	ABS	Absorption factor	unitless	Chemspecific****	Region II			CDI = CS x 2.2E-07 x ABS (Carcinogenic)
	EF	Exposure Frequency	events/yr	65	Site-specific**			CI
	ED	Exposure Duration	yrs	1	RAGS, Part A			CDI = CS x 1.6E-05 x ABS (Noncarcinogenic)
	CF1	Conversion factor	kg/mg	10-6	.			CDI = CS x 2.2E-07 x ABS (Carcinogenic)
	BW	Body Weight	kg	70	RAGS, Part A			
	AT-NC	Averaging Time (noncancer)	days	365	RAGS, Part A			
	AT-C	Averaging Time (cancer)	days	25,550	RAGS, Part A			

TABLE 4.8 VALUES USED FOR DAILY INTAKE CALCULATIONS HORSESHOE ROAD COMPLEX, SAYREVILLE, NEW JERSEY

Scenario Timeframe: Future
Medium: Building Materials
Exposure Medium: Building Materials
Exposure Point: ADC and ARC
Receptor Population: Site Workers
Receptor Age: Adult

xposure Route	Parameter	Parameter Definition	Units	RME	RME	CT	СТ	Intake Equation/	
	Code			Value	Rationale/	Value	Rationale/	Model Name	
Ingestion	СВМ	Chemical Concentration in Building		Cham	Reference	Obama anasifis	Reference	and the same area.	
rigesoon	CDM	Materials	mg/kg	Chemspecific 95th UCL or Max.*		Chemspecific	-	Chronic Deily Intake (CDI) (mg/kg/day) =	
	IR	Indestion rate		50	RAGS, Part A	Average 25	Di !!	CBM x IR x FI x EF x ED x CF1 x 1/BW x 1/AT	
			mg/day	30		25	Region II	RME	
	FI	Fraction Ingested	unitless	1	RAGS, Part A	405		CDI = CBM x 4.9E-07 (Noncarcinogenic)	
	EF	Exposure Frequency	days/yr	250	Site-specific**	185	Region II	CDI = CBM x 1.8E-07 (Carcinogenic)	
	ED	Exposure Duration	yrs	25	RAGS, Part A	9	RAGS, Part A	C I	
	CF1	Conversion factor	kg/mg	10-6	\ -		1	CDI = CS x 2.0E-07 (Noncarcinogenic)	
	₽W	Body Weight	kg	70	RAGS, Part A		1	CDI = CS x 2.3E-08 (Carcinogenic)	
	AT-NC	Averaging Time (noncancer)	days	9,125	RAGS, Part A	3,285			
	AT- C	Averaging Time (cancer)	days	25,550	RAGS, Part A		1		
Dermal	CBM	Chemical Concentration in Building	mg/kg	Chemspecific	. [Chem -specific	-	Chronic Deity Intake (CDI) (mg/kg/day) =	
		Materials		95th UCL or Max.*		Average	1	CS x SA x AF x ABS x EF x ED x CF1 x 1/BW x 1/AT	
	SA	Skin surface area available for contact	cm2/event	5,800	EFH, 1997	5,000	EFH, 1997	RME	
	AF	Soil-to-skin adherence factor	mg/cm2	1	DEA, 1992		}	CDI = CS x 5.7E-05 x ABS (Noncarcinogenic)	
	ABS	Absorption factor	unitless	Chemspecific****	Region II			CDI = CS x 2.0E-05 x ABS (Carcinogenic)	
	EF	Exposure Frequency	events/yr	250	Site-specific**	185	Region II	CI	
	ED	Exposure Duration	yrs	25	RAGS, Part A	9	RAGS, Part A	CDI = CS x 3.6E-05 x ABS (Noncarcinogenic)	
	CF1	Conversion factor	kg/mg	10-6				CDI = CS x 4.7E-06 x ABS (Carcinogenic)	
	BW	Body Weight	kg	70	RAGS, Part A				
	AT-NC	Averaging Time (noncencer)	days	9,125	RAGS, Part A	3,285			
l	AT- C	Averaging Time (cancer)	days	25,550	RAGS, Part A	ı	1		

TABLE 4.9 VALUES USED FOR DAILY INTAKE CALCULATIONS HORSESHOE ROAD COMPLEX, SAYREVILLE, NEW JERSEY

Scenario Timeframe: Future Medium: Building Materials

Exposure Medium: Building Materials

Exposure Point: ADC and ARC

Receptor Population: Construction Workers

Receptor Age: Adult

Exposure Route	Parameter	Parameter Definition	Units	RME	RME	CT	ст	Intake Equation/
	Code		1	Value	Rationale/	Value	Rationale/	Model Name
respondente i del cica					Reference		Reference	
Ingestion	CBM	Chemical Concentration in Building	mg/kg	Chemspecific		Chemspecific	-	Chronic Daily Intake (CDI) (mg/kg/day) =
		Materials		95th UCL or Max.*		Average		CBM x IR x FI x EF x ED x CF1 x 1/BW x 1/AT
	IR	Ingestion rate	mg/day	480	RAGS, Part A		ļ	RME
	FI	Fraction ingested	unitless	1	RAGS, Part A			CDI = CBM x 1.2E-08 (Noncarcinogenic)
	EF	Exposure Frequency	days/yr	65	Site-specific**			CDI = CBM x 1.7E-08 (Carcinogenic)
	ED	Exposure Duration	yrs	1	RAGS, Part A			CI
	CF1	Conversion factor	kg/mg	10-6	-			CDI = CBM x 1.2E-06 (Noncarcinogenic)
	8W	Body Weight	ka	70	RAGS, Part A			CDI = CBM x 1.7E-08 (Carcinogenic)
	AT-NC	Averaging Time (noncancer)	days	365	RAGS, Part A			
	AT-C	Averaging Time (cancer)	days	25,550	RAGS, Part A		1	1
Dermat	CBM	Chemical Concentration in Building	mg/kg	Chemspecific	. [Chemspecific		Chronic Deily Intake (CDI) (mg/kg/day) =
		Materials		95th UCL or Max.*	1	Average	1	CBM x SA x AF x ABS x EF x ED x CF1 x 1/BW x 1/AT
	SA	Sien surface area available for contact	cm2/event	6,125	EFH, 1997			RME
	AF	Soil-to-skin adherence factor	mg/cm2	1	DEA, 1992		1	CDI = CBM x 1.6E-05 x ABS (Noncarcinogenic)
	ABS	Absorption factor	unitless	Chem -specific****	Region II			CDI = CBM x 2 2E-07 x ABS (Carcinogenic)
	EF	Exposure Frequency	events/yr	65	Site-specific**		ł	CI
	ED	Exposure Duration	угв	1	RAGS, Part A			CDI = CBM x 1.6E-05 x ABS (Noncarcinogenic)
	CF1	Conversion factor	kg/mg	10-6	.			CDI = CBM x 2.2E-07 x ABS (Carcinogenic)
	BW	Body Weight	kg	70	RAGS, Part A			
	AT-NC	Averaging Time (noncencer)	days	365	RAGS, Part A			
	AT- C	Averaging Time (cancer)	days	25,550	RAGS, Part A		1	

TABLE 4.10 VALUES USED FOR DAILY INTAKE CALCULATIONS HORSESHOE ROAD COMPLEX, SAYREVILLE, NEW JERSEY

Scenario Timeframe: Future
Medium: Surface Water
Exposure Medium: Surface Water

Exposure Point: Raritan River and Downstream Marsh

Receptor Population: Residents

Receptor Age: Adult

Exposure Route	Parameter	Parameter Definition	Units	RME	RME	СТ	СТ	intake Equation/
	Code			Value	Rationale/	Value	Rationale/	Model Name
7.5 22.2			<u> </u>		Reference		Reference	n de tente seguina de la companiona del companiona del companiona del companiona del compan
Ingestion	CSW	Chemical Concentration in Surface Water	mg/l	Chem -specific	[- [Chemspecific		Chronic Daily Intake (CDI) (mg/kg/day) =
			ł	95th UCL or Max.*	! !	Average		CSW x CR x ET x EF x ED x 1/BW x 1/AT
	CR	Contact rate	Vhr	0.05	RAGS, Part A		l	RME
	ET	Expasure Time	hr/event	2.6	RAGS, Part A			CDI = CSW x 1.2E-04 (Noncarcinogenic)
	EF	Exposure Frequency	events/yr	24	Site-specific**		}	CDI = CSW x 4.1E-05 (Carcinogenic)
	EÐ	Exposure Duration	yrs	24	RAGS, Part A	9	RAGS, Part A	CI
	BW	Body Weight	kg	70	RAGS, Part A		1	CDI = CSW x 1.2E-04 (Noncarcinogenic)
	AT-NC	Averaging Time (noncencer)	days	8,760	RAGS, Part A	3,285		CDI = CSW x 1.5E-05 (Carcinogenic)
	AT-C	Averaging Time (cancer)	days	25,550	RAGS, Part A			
Dermal	CSW	Chemical Concentration in Surface Water	mg/l	Chemspecific	l - I	Chemspecific	-	Chronic Daily Intake (CDI) (mg/kg/day) =
			1	95th UCL or Max.*	i i	Average		CSW x SA x PC x ET x EF x ED x CF x 1/BW x 1/AT
	SA	Skin surface area available for contact	cm2/event	23,000	EFH, 1997	20,000	EFH, 1997	RME
	PC	Permeability Constant	cm/hr	Chemspecific	DEA, 1992			CDI = CSW x 5.6E-02 x PC (Noncarcinogenic)
	ET	Exposure time	hrs/day	2.6	RAGS, Part A			CDI = CSW x 1.9E-02 x PC (Carcinogenic)
	EF	Exposure Frequency	events/yr	24	Site-specific**			CI
,	ED	Exposure Duration	уга	24	RAGS, Part A	9	RAGS, Part A	CDI = CSW x 4.9E-02 x PC (Noncercinogenic)
,	CF1	Conversion factor	Vcm3	10-3				CDI = CSW x 6.2E-03 x PC (Carcinogenic)
	BW	Body Weight	kg	70	RAGS, Part A			
	AT-NC	Averaging Time (noncancer)	days	8,760	RAGS, Part A	3,285		
	AT-C	Averaging Time (cancer)	days	25,550	RAGS, Part A			

TABLE 4.11 VALUES USED FOR DAILY INTAKE CALCULATIONS HORSESHOE ROAD COMPLEX, SAYREVILLE, NEW JERSEY

Scenario Timeframe: Future
Medium: Surface Water
Exposure Medium: Surface Water
Exposure Point: Reritan River and Downstream Marsh
Receptor Population: Residents
Receptor Age: Child

Exposure Route	Parameter	Parameter Definition	Units	RME	RME	СТ	ст	Intake Equation/
	Code			Value	Rationale/	Value	Rationale/	Model Name
				ļ. <u>.</u>	Reference	received and a control	Reference	
Ingestion	CSW	Chemical Concentration in Surface Water	mg/l	Chemspecific	- 1	Chemspecific		Chronic Daily Intake (CDI) (mg/kg/day) =
			1	95th UCL or Max.*		Average		CSW x CR x ET x EF x ED x 1/BW x 1/AT
	CR	Contact Rate	Vhr	0.05	RAGS, Part A			RME
	ET	Exposure time	hr/event	2.6	RAGS, Part A			CDI = CSW x 5.7E-04 (Noncarcinogenic)
	EF	Exposure Frequency	events/yr	24	Site-specific**			CDI = CSW x 4.9E-05 (Carcinogenic)
	€D	Exposure Duration	yrs	6	RAGS, Part A			CI
	BW	Body Weight	kg	15	RAGS, Part A	l	1	CDI = CSW x 5.7E-04 (Noncarcinogenic)
	AT-NC	Averaging Time (noncancer)	days	2,190	RAGS, Part A		1	CDI = CSW x 4.9E-05 (Carcinogenic)
i	AT-C	Averaging Time (cancer)	days	25,550	RAGS, Part A			
Dermal	CS	Chemical Concentration in Surface Water	mg/l	Chemspecific	-	Chemspecific		Chronic Deily Intake (CDI) (mg/kg/day) =
				95th UCL or Max.*		Average		CSW x SA x PC x ET x EF x ED x CF x 1/BW x 1/AT
	SA	Skin surface area available for contact	cm2/event	8,023	EFH, 1997	6,978	EFH, 1997	RME
	PC	Permeability Constant	cm/hr	Chemspecific	DEA, 1992			CDI = CSW x 9.1E-02 x PC (Noncercinogenic)
	ET	Exposure time	hrs/day	2.6	RAGS, Part A			CDI = CSW x 7.8E-03 x PC (Carcinogenic)
	EF	Exposure Frequency	events/yr	24	Site-specific**			CI
	ED	Exposure Duration	yrs	6	RAGS, Part A			CDI = CSW x 8.0E-02 x PC (Noncarcinogenic)
	CF1	Conversion factor	Vcm3	10-3	-			CDI = CSW x 6.8E-03 x PC (Carcinogenic)
	BW	Body Weight	kg	15	RAGS, Part A			
	AT-NC	Averaging Time (noncancer)	days	2,190	RAGS, Part A			
;	AT-C	Averaging Time (cancer)	days	25,550	RAGS, Part A		}	

TABLE 4.12 VALUES USED FOR DAILY INTAKE CALCULATIONS HORSESHOE ROAD COMPLEX, SAYREVILLE, NEW JERSEY

Scenario Timeframe: Future

Medium: Sediment

Exposure Medium: Sediment

Exposure Point: Raritan River and Downstream Marsh

Receptor Population: Residents

Receptor Age: Adult

oposure Route	Parameter	Parameter Definition	Units	RME	RME	CT	CT	Intake Equation/
	Code		ļ	Value	Rationale/	Value	Rationale/	Model Name
			1] i	Reference		Reference	
Ingestion	C8E	Chemical Concentration in Sediment	mg/kg	Chemspecific	-	Chem-specific		Chronic Daily Intake (CDI) (mg/kg/day) =
				95th UCL or Max.*		Average	1	CSE x IR x FI x EF x ED x CF1 x 1/BW x 1/AT
	IR	Ingestion rate	rng/day	100	RAGS, Part A		}	RME
	FI	Fraction ingested	unitiess	1 1	RAGS, Part A			CDI = CSE x 9.4E-08 (Noncarcinogenic)
	EF	Exposure Frequency	days/yr	24	Site-specific**			CDI = CSE x 3.2E-08 (Carcinogenic)
	ED	Exposure Duration	yrs	24	RAGS, Part A	9	RAGS, Part A	CI
	CF1	Conversion factor	kg/mg	10-6	-		}	CDI = CSE x 9.4E-08 (Noncarcinogenic)
	BW	Body Weight	kg	70	RAGS, Part A		ł.	CDI = CSE x 1.2E-06 (Carcinogenic)
	AT-NC	Averaging Time (noncancer)	days	8,760	RAGS, Part A	3,285		
	AT-C	Averaging Time (cancer)	days	25,550	RAGS, Part A		<u> </u>	
Dermal	CSE	Chemical Concentration in Sediment	mg/kg	Chemspecific		Chemspecific		Chronic Daily Intake (CDI) (mg/kg/day) =
				95th UCL or Max.*		Average		CSE x SA x AF x ABS x EF x ED x CF x 1/BW x 1/AT
	SA	Sidn surface area available for contact	cm2/event	2,500	EFH, 1997			RME
	AF	Sediment-to-skin adherence factor	mg/cm2	1 1	DEA, 1992		ai .	CDI = CSE x 2.4E-06 x ABS (Noncarcinogenic)
	ABS	Absorption factor	unitless	Chemspecific****	Region II		1	CDI = CSE x 8.1E-07 x ABS (Carcinogenic)
	EF	Exposure Frequency	events/yr	24	Site-specific**		1	CI
	ED	Exposure Duration	yrs	24	RAGS, Part A	9	RAGS, Part A	CDI = CSE x 2 4E-06 x ABS (Noncercinogenic)
	CF1	Conversion factor	kg/mg	10-6				CDI = CSE x 3.1E-07 x ABS (Carcinogenic)
	BW	Body Weight	kg	70	RAGS, Part A			
	AT-NC	Averaging Time (noncancer)	days	8,760	RAGS, Part A	3,285		
	AT-C	Averaging Time (cancer)	days	25,550	RAGS, Part A		1	

TABLE 4.13 VALUES USED FOR DAILY INTAKE CALCULATIONS HORSESHOE ROAD COMPLEX, SAYREVILLE, NEW JERSEY

Scenario Timeframe: Future Medium: Sediment

Exposure Medium: Sediment

Exposure Point: Raritan River and Downstream Marsh

Receptor Population: Residents

Receptor Age: Child

xposure Route	Parameter	Parameter Definition	Units	RME	RME	CT	СТ	Intake Equation/
	Code		į	Value	Rationale/	Value	Rationale/	Model Name
					Reference		Reference	<u> </u>
Ingestion	CSE	Chemical Concentration in Sediment	rng/kg	Chemspecific	-	Chemspecific	-	Chronic Daily Intake (CDI) (mg/kg/day) =
			1	95th UCL or Max.*)	Average		CSE x IR x FI x EF x ED x CF1 x 1/BW x 1/AT
	₩R	Ingestion rate	mg/day	200	RAGS, Part A			RME
	FI	Fraction ingested	unitiess	1	RAGS, Part A			CDI = CSE x 8.8E-07 (Noncarcinogenic)
	EF	Exposure Frequency	days/yr	24	Site-specific**			CDI = CSE x 7 5E-08 (Carcinogenic)
	ED	Exposure Duration	yrs	6	RAGS, Part A			CI
	CF1	Conversion factor	kg/mg	10-6	-			CDI = CSE x 8 8E-07 (Noncarcinogenic)
	BW	Body Weight	kg	15	RAGS, Part A			CDi = CSE x 7.5E-08 (Carcinogenic)
	AT-NC	Averaging Time (noncencer)	days	2,190	RAGS, Part A			
Maria and Maria and T	AT-C	Averaging Time (cancer)	days	25,550	RAGS, Part A			
Dermal	CSE	Chemical Concentration in Sediment	mg/kg	Chemspecific	1 -	Chemspecific		Chronic Daily Intake (CDI) (mg/kg/day) =
				95th UCL or Max.*	ĺ	Average		CSE x SA x AF x ABS x EF x ED x CF x 1/BW x 1/AT
	SA	Skin surface area available for contact	cm2/event	1,600	EFH, 1997			RME
	AF	Sediment-to-skin adherence factor	mg/cm2	1	DEA, 1992		ļ	CDI = CSE x 7.0E-08 x ABS (Noncarcinogenic)
	ABS	Absorption factor	unitiess	Chemspecific****	Region II			CDI = CSE x 6 0E-07 x ABS (Carcinogenic)
	EF	Exposure Frequency	events/yr	24	Site-specific**			CI
	ED	Exposure Duration	yrs	6	RAGS, Part A		ļ	CDI = CSE x 7.0E-08 x ABS (Noncarcinogenic)
	CF1	Conversion factor	kg/mg	10-6	-			CDI = CSE x 6.0E-07 x ABS (Carcinogenic)
	BW	Body Weight	ko	15	RAGS, Part A			}
	AT-NC	Averaging Time (noncancer)	days	2,190	RAGS, Part A			
	AT-C	Averaging Time (cencer)	days	25,550	RAGS, Part A		}	1

TABLE 4.14

VALUES USED FOR DAILY INTAKE CALCULATIONS HORSESHOE ROAD COMPLEX, SAYREVILLE, NEW JERSEY

References:

RAGS, Part A. US EPA, Risk Assessment Guidance for Superfund, Volume I, Human Health Evaluation Manual, Part A, Interim Final. December 1989.

EFH, 1997. USEPA, Exposure Factors Handbook. August 1997.

DEA, 1992. Dermal Exposure Assessment: Principles and Applications, Interim Report. January 1992.

Region II. EPA Region II Risk Assessment Specialists.

Notes:

- * The 95th UCL will be used as the chemical concentration, unless the 95th UCL exceeds the maximum detected concentration. In this case, the maximum detection will be used.
- ** Site-specific exposure time and frequency based on site location and accessibility.
- *** Surface area based on the average skin surface area for males and females the following body parts:

Trespasser (Youth) for surface soil - 2,535 cm2 based on lower legs.

Trespesser (Youth) for surface water and sediment - 920 cm2 based on feet.

Site workers (Adult) for surface and subsurface soil - 5,800 cm2 based on forearms, hands, and lower legs.

Construction Worker (Adult) for surface and subsurface soil - 6,125 cm2 based on upper extremities and lower legs.

Resident (Adult) for surface water - 23,000 based on entire body.

Resident (Child) for surface water - 8,023 cm2 based on entire body.

Resident (Adult) for sediment - 2,500 cm2 based on hands and feet.

Resident (Child) for sediment - 1,600 cm2 based on hands and feet.

•••• - Region II currently provides dermal absorption factors and their references for the following chemicals:

Arsenic 3% - Wester, et al (1993a) PAHs (benzo(a)pyrene) 13% - Wester, et al (1990)

Cadmium 0.1% - Wester, et al (1992a), USEPA (1992)

PCBs (Aroclor 1254 and 1242) 14% - Wester, et al (1993b)

Chlordane 4% - Wester, et al (1992b)

Generic default SVOCs 10%

Pentachlorophenol 25% - Wester, et al (1993c)

DDT 3% - Wester, et al (1990)

TCDD (dioxin) <10% organic soll 3% USEPA (1992)

Inorganics 1%

<10% organic soil 0.1% USEPA (1992)

TABLE 5.1

NON-CANCER CHRONIC TOXICITY DATA -- ORAL
HORSESHOE ROAD COMPLEX SITE, SAYREVILLE, NEW JERSEY

Chemical	Chronic/	Oral RfD	Oral RfD	Primary	Combined	Sources of RfD:	Dates of RfD
of Potential	Subchronic	Value	Units	Target	Uncertainty/Modifying	Target Organ	Target Organ
Concern	-1,	1	1 1.	Organ	Factors		(MM/DDYY)
folatile Organics			}				
Acetone	Chronic	1.0E-001	mg/kg/day	Liver/kidney	1000	IRIS (1)	11/09/98
3enzene	Chronic	3.0E-003	mg/kg/day	-	-	NCEA (3)	10/01/98
Bromodichloromethene	Chronic	2.0E-002	mg/kg/day	Kidney	1000	IRIS	11/09/98
3romomethane	Chronic	1.4E-003	mg/kg/day	Forestomach	1000	IRIS	11/09/98
2-Butanone	Chronic	6.0E-001	mg/kg/day	Fetus	3000	IRIS	11/09/98
Cerbon Disulfide	Chronic	1.0E-001	mg/kg/day	Fetus	100	IRIS	11/09/98
Carbon Tetrachloride	Chronic	7.0E-004	mg/kg/day	Liver	1000	IRIS	11/09/98
Chlorobenzene	Chronic	2.0E-002	mg/kg/day	Liver	1000	IRIS	11/09/98
Chloroethane	Chronic	4.0E-001	mg/kg/day	•	-	NCEA	10/01/98
Chloroform	Chronic	1.0E-002	mg/kg/day	Liver	1000	IRIS	11/09/98
Chloromethane	Chronic	-	mg/kg/day	•	-	-	•
,1-Dichloroethane	Chronic	1.0E-001	mg/kg/day	None	1000	HEAST (2)	1997
,2-Dichloroethane	Chronic	3.0E-002	mg/kg/day	•	-	NCEA	10/01/98
1,1-Dichloroethene	Chronic	9.0E-003	mg/kg/day	Liver	1000	IRIS	11/09/98
cis 1,2-Dichloroethene	Chronic	1.0E-002	mg/kg/day	Blood	3000	HEAST	1997
rans 1,2-Dichloroethene	Chronic	2.0E-002	mg/kg/day	Blood	1000	IRIS	11/09/98
otal 1,2-Dichloroethene	Chronic	9.0E-003	mg/kg/day	Liver	1000	IRIS	11/09/98
1,2-Dichloropropane	Chronic		mg/kg/day	-	-	•	-
rans-1,3-Dichloropropene	Chronic	3.0E-004	mg/kg/day	Organ weights	10000	IRIS	11/09/98
Ethylbenzene	Chronic	1.0E-001	mg/kg/day	Liver/Kidney	1000	IRIS	11/09/98
Methylene Chloride	Chronic	8.0E-002	mg/kg/day	Liver	100	IRIS	11/09/98
I-Methyl-2-Pentanone	Chronic	8.0E-002	mg/kg/day	Whole Body/Liver	3000	HEAST	1997
Styrene	Chronic	2.0E-001	mg/kg/day	Blood/liver	1000	IRIS	11/09/98
Tetrachloroethene	Chronic	1.0E-002	mg/kg/day	Liver	1000	IRIS	11/09/98
I,1,2,2-Tetrachloroethane	Chronic	6.0E-002	mg/kg/day	•		NCEA	10/01/98
oluene	Chronic	2.0E-001	mg/kg/day	Liver/Kidney	1000	IRIS	11/09/98
I,1,1-Trichloroethene	Chronic	2.0E-002	mg/kg/day		3000	NCEA	10/01/98
,1,2-Trichloroethane	Chronic	4.0E-003	mg/kg/day	Blood	1000	IRIS	11/09/98
richloroethene	Chronic	6.0E-003	mg/kg/day		3000	NCEA	10/01/98
Vinyl Chloride	Chronic		mg/kg/day	•			
Kylenes (Total)	Chronic	2.0E+000	mg/kg/day	CNS/Whole Body	100	IRIS	11/09/96

TABLE 5.1

NON-CANCER CHRONIC TOXICITY DATA -- ORAL
HORSESHOE ROAD COMPLEX SITE, SAYREVILLE, NEW JERSEY

Chemical	Chronic/	Oral RfD	Oral RfD	Primary	Combined	Sources of RfD:	Dates of RfD
of Potentiel	Subchronic	Value	Units	Target	Uncertainty/Modifying	Target Organ	Target Organ
Concern	A STANDARD OF THE PARTY OF THE		.	Organ	Factors		(MM/DDYYY)
Semivolatile Organics						, i	
Acenephthene	Chronic	6.0E-002	mg/kg/day	Liver	3000	IRIS	11/09/98
Acenaphthylene	Chronic	-	mg/kg/day	-	•	•	-
Anthracene	Chronic	3.0E-001	mg/kg/day	None	3000	IRIS	11/09/98
Benzo(a)anthracene	Chronic		mg/kg/day	-	-	-	•
Benzo(a)pyrene	Chronic		mg/kg/day	-	-	-	-
Benzo(b)fluorenthene	Chronic	-	mg/kg/day	- ,	•	-	-
Benzo(g,h,i)perylene	Chronic		mg/kg/day	-	-	-	-
Benzo(k)fluoranthene	Chronic	-	mg/kg/day	-	-		-
Bis(2-chloroethyl)ether	Chronic		mg/kg/day	-	-	-	-
Bis(2-ethylhexyl)phthalate	Chronic	2.0E-002	mg/kg/day	Liver	1000	IRIS	11/09/98
Butylbenzyl phthalate	Chronic	2.0E-001	mg/kg/day	Liver	1000	IRIS	11/09/98
Carbazole	Chronic	-	mg/kg/day	-	-	-	-
4-Chloroaniline	Chronic	4.0E-003	mg/kg/day	Spleen	3000	IRIS	11/09/98
2-Chloronaphthalene	Chronic	8.0E-002	mg/kg/day			'	
Chrysene	Chronic	-	mg/kg/day	-		-	-
Dibenzo(a,h)anthracene	Chronic	-	mg/kg/day	-	-	-	
Dibenzofuran	Chronic	4.0E-003	mg/kg/day	-	-	NCEA	10/01/98
Di-n-butyl phthalate	Chronic	1.0E-001	mg/kg/day	Whole Body	1000	IRIS	11/09/98
1,2-Dichlorobenzene	Chronic	9.0E-002	mg/kg/day	None	1000	IRIS	11/09/98
1,3-Dichlorobenzene	Chronic	3.0E-002	mg/kg/day	-	-	NCEA	10/01/98
1,4-Dichlorobenzene	Chronic	3.0E-002	mg/kg/day	-	-	NCEA	10/01/96
2,4-Dichlorophenol	Chronic	3.0E-003	mg/kg/day	Hypersensitivity	100	IRIS	11/09/98
Diethyl phthalate	Chronic	8.0E-001	mg/kg/day	Whole Body/Organs	1000	IRIS	11/09/98
2,4-Dimethylphenol	Chronic	2.0E-002	mg/kg/day	Clinical signs/Blood	3000	IRIS	11/09/98
2,4-Dinitrotoluene	Chronic	2.0E-003	mg/kg/day	Nervous system	100	IRIS	11/09/98
Di-n-octyl phthalate	Chronic	2.0E-002	mg/kg/day	Kidney/Liver	1000	HEAST	1997

TABLE 5.1

NON-CANCER CHRONIC TOXICITY DATA — ORAL
HORSESHOE ROAD COMPLEX SITE, SAYREVILLE, NEW JERSEY

Chemical	Chronic/	Onal RfD	Oral RfD	Primary	Combined	Sources of RfD:	Dates of RfD
of Potential	Subchronic	Value	Units	Target	Uncertainty/Modifying	Target Organ	Target Organ
Concern		ļ <u> </u>	<u> </u>	Organ	Factors		(MM/DD/YY)
Semivolatile Organics (Confd)	1	-			I		
Fluoranthene	Chronic	4.0E-002	mg/kg/day	Kidney/Liver/Blood	3000	IRIS	11/09/98
Fluorene	Chronic	4.0E-002	mg/kg/day	Blood	3000	IRIS	11/09/98
Hexachlorobutadiene	Chronic	2.0E-004	mg/kg/day	Kidney	1000	HEAST	1997
Hexachlorocyclopentadiene	Chronic	7.0E-003	mg/kg/day	Stomach	1000	IRIS	11/09/98
-lexachlorethene	Chronic	1.0E-003	mg/kg/day	Kidney	1000	IRIS	11/09/98
indeno(1,2,3-cd)pyrene	Chronic	-	mg/kg/day	-	-	-	-
sophorone	Chronic	2.0€-001	mg/kg/day	Kidney	1000	IRIS	11/09/98
2-Methylnephthalens	Chronic	2.0E-002	mg/kg/day	-	-	RBC (7)	10/01/98
2-Methylphenol	Chronic	5.0E-002	mg/kg/day	Whole Body/CNS	1000	IRIS	11/09/98
I-Methylphenol	Chronic	5.0E-003	mg/kg/day	CNS/Respiratory	1000	HEAST	1997
Naphthalene	Chronic	2.0E-002	mg/kg/day	Whole Body	1000	NCEA	10/01/98
Nitrobenzene	Chronic	5.0E-004	mg/kg/day	Blood/Adrenal	10000	IRIS	11/09/98
n-Nitrosodiphenylamine	Chronic		mg/kg/day	-	-	-	•
2-Nitrophenol	Chronic	-	mg/kg/day	•		-	-
I-Nitrophenol	Chronic	8.0E-003	mg/kg/day	-	· ·	NCEA	10/01/98
Pentachiorophenol	Chronic	3.0E-002	mg/kg/day	Liver/Kidney	100	IRIS	11/09/98
Phenanthrene	Chronic		mg/kg/day	•		-	-
Phenol	Chronic	6.0E-001	mg/kg/day	Fetus	100	IRIS	11/09/98
Pyrene	Chronic	3.0E-002	mg/kg/day	Kidney	3000	IRIS	11/09/96
I,2,3-Trichlorobenzene	Chronic	-	mg/kg/day				-
1,2,4-Trichlorobenzene	Chronic	1.0E-002	mg/kg/day	Adrenal	1000	IRIS	11/09/98
2,4,6-Trichlorophenol	Chronic	-	mg/kg/day			-	•
2.4.5-Trichlorophenol	Chronic	1.0E-001	mg/kg/day	Liver/Kidney	1000	IRIS	11/09/98

TABLE 5.1

NON-CANCER CHRONIC TOXICITY DATA -- ORAL
HORSESHOE ROAD COMPLEX SITE, SAYREVILLE, NEW JERSEY

Chemical	Chronic/	Oral RfD	Oral RfD	Primary	Combined	Sources of RfD:	Dates of RfD
of Potentiel	Subchronic	Value	Units	Target	Uncertainty/Modifying	Target Organ	Target Organ
Concern				Organ	Factors		(MM/DD/YY)
Pesticides/PCBs							
Aldrin	Chronic	3.0E-005	mg/kg/day	Liver	1000	IRIS	11/09/98
4,4°-DDD	Chronic	-	mg/kg/day	-	-	•	
4,4'-DDE	Chronic		mg/kg/day	-		-	-
4,4'-DDT	Chronic	5.0E-004	mg/kg/day	Liver	100	IRIS	11/09/98
alpha-BHC	Chronic		mg/kg/day	-		i -	-
beta-BHC	Chronic	-	mg/kg/day	•	-	•	-
delta-BHC	Chronic		mg/kg/day	÷		-	•
gamme-BHC (Lindane)	Chronic	3.0E-004	mg/kg/day	Liver/Kidney	1000	IRIS	11/09/98
alpha-Chlordane	Chronic	5.0E-004	mg/kg/day	Liver	300	IRIS (4)	11/09/98
gamma-Chlordane	Chronic	5.0E-004	mg/kg/day	Liver	300	IRIS (4)	11/09/96
Dieldrin	Chronic	5.0E-005	mg/kg/day	Liver	100	IRIS	11/09/98
Endosulfan I	Chronic	6.0E-003	mg/kg/day	Whole Body/Kidney	100	IRIS (5)	11/09/98
Endosulfan II	Chronic	6.0E-003	mg/kg/day	Whole Body/Kidney	100	IRIS (5)	11/09/98
Endrin	Chronic	3.0E-004	mg/kg/day	CNS/Liver	100	IRIS	11/09/98
Endrin Aldehyde	Chronic	-	mg/kg/day	-		-	•
Endrin Ketone	Chronic	-	mg/kg/day	-	-	-	
Heptachlor	Chronic	5.0E-004	mg/kg/day	Liver	300	IRIS	11/09/98
Heptschlor Epoxide	Chronic	1.3E-005	mg/kg/day	Liver	1000	IRIS	11/09/98
Methoxychlor	Chronic	5.0E-003	mg/kg/day	Reproductive	1000	IRIS	11/09/98
PCBs: Aroclor 1242	Chronic		mg/kg/day	-	-	-	-
Aroclor 1248	Chronic		mg/kg/day	•	-	-	-
Aroclor 1254	Chronic	2.0E-005	mg/kg/day	Immune System	300	IRIS	11/09/98
Arocior 1280	Chronic	-	mg/kg/day	-		} -	
Dioxia		1					
2,3,7,8-TCDD	Chronic	-	mg/kg/day	-			

TABLE 5.1

NON-CANCER CHRONIC TOXICITY DATA -- ORAL

HORSESHOE ROAD COMPLEX SITE, SAYREVILLE, NEW JERSEY

Chemical	Chronic/	Oral RfD	Oral RfO	Primary	Combined	Sources of RfD:	Dates of RfD
of Potential	Subchronic	Value	Units	Target	Uncertainty/Modifying	Target Organ	Target Organ
Concern	<u> </u>		1	Organ	Factors	l	(MM/DDYY)
lnorganies	1	1 -		·			
Akuminum	Chronic	1.0E+000	mg/lqg/day	-	100	NCEA	10/01/98
Antimony	Chronic	4.0E-004	mg/kg/day	Whole Body/Blood	1000	IRIS	11/09/98
Arsenic	Chronic	3.0E-004	mg/kg/day	Skin	3	IRIS	11/09/98
Berium	Chronic	7.0E-002	mg/kg/day	Cardiovascular	3	IRIS .	11/09/98
Beryllium	Chronic	2.0E-003	mg/kg/day	Small Intestine	300	IRIS	11/09/98
Cadmium (food)	Chronic	1.0E-003	mg/kg/day	Kidney	10	IRIS	11/09/98
Cadmium (weter)	Chronic	5.0E-004	mg/kg/day	Kidney	10	IRIS	11/09/98
Chromium III (insoluble salts)	Chronic	1.5E+000	mg/kg/day	None	100	IRIS	11/09/98
Chromium VI	Chronic	3.0E-003	mg/kg/day	None	300	IRIS	11/09/98
Cobelt	Chronic	6.0E-002	mg/kg/day	•	-	NCEA	10/01/98
Copper	Chronic	4.0E-002	mg/kg/day	•	-	NCEA	10/01/98
Cyanide (free)	Chronic	2.0E-002	mg/kg/day	Weight loss/thyroid	500	IRIS	11/09/98
Leed (and compounds-inorg.)**	Chronic		mg/kg/day	•		-	-
Manganese	Chronic	2.4E-002	mg/kg/day		3	NCEA	10/01/98
Mercury (elemental)	Chronic	-	mg/kg/day	•	-	- !	•
Nickel (soluble salt)	Chronic	2.0E-002	mg/kg/day	Whole Body Organs	300	IRIS	11/09/98
Selenium	Chronic	5.0E-003	mg/kg/day	Whole Body	3	IRIS	11/09/98
Silver	Chronic	5.0E-003	mg/kg/day	Skin	3	IRIS	11/09/98
Thellium	Chronic	7.0E-005	mg/kg/day	Liver/blood/hair		RBC	10/01/98
Vanadium	Chronic	7.0E-003	mg/kg/day	None	100	HEAST	1997
Zinc (and compounds)	Chronic	3.0€-001	mg/kg/day	Blood	3	IRIS	11/09/98

Motos

- Calcium, Iron, magnesium, potessium, and sodium are considered essential nutrients and will not be quantitatively evaluated in the risk assessment.
- * A modifying factor of 3 was used to address the lack of unequivocal data for respiratory tract effects.
- ** Since no noncercinogenic toxicity values are currently established for lead, only a qualitative evaluation of this chemical can be performed. The USEPA's Revised interim Solf Guidence for CERCLA Sites and RCRA Corrective Action Facilities, QSWER Directive 9355.4-12, recommends screening levels for solf of 400 ppm for residential land use (USEPA, 1994). New Jersey's Drinking Water and Ground Water Update recommends an action level for lead in drinking water of 15 ug/l (USEPA, 1993).
- (1) All toxicity values were obtained from Integrated Risk Information System (IRIS) (on-line November 1998) unless otherwise noted.
- (2) Toxicity values were obtained from Health Effects Assessment Summary Tables (HEAST) Annual FY-1997.
- (3) Toxicity values were obtained by the National Center for Environmental Assessment (NCEA). EPA Region III Risk-based Concentration (RBC) Table 10/1/98.
- (4) The noncarcinogenic toxicity values for technical chlordane are reported from IRIS, as the individual alpha and gamma-chlordane isomers do not have established noncarcinogenic toxicity values.
- (5) The noncarcinogenic toxicity values for endosulfan are reported from IRIS, as the individual endosulfan I and endosulfan II isomers do not have established noncarcinogenic toxicity values.
- (6) The total intake of mangenese is estimated to be 10 mg/day. Of the 10 mg/day, 5 mg/day is subtracted as the estimated delty dietary intake. The remaining value, 5 mg/day, was then divided by 70 kg (adult body weight) and by a modifying factor of 3 (sensitive individuals).
- (7) Toxicity values were obtained from EPA, Region III, Risk-based Concentration (RBC) table, 10/1/96.

TABLE 5.2 NON-CANCER TOXICITY DATA -- INHALATION

HORSESHOE ROAD COMPLEX SITE, SAYREVILLE, NEW JERSEY

Chemical of Potential Concern	Chronic/ Subchronic	Value Inhalation RIC	Units	Adjusted Inhalation RfD (1)	Units	Primary Target Organ	Combined Uncertainty/Modifying Factors	Sources of RfC:RfD: Target Organ	Dates (2) (MM/DD/YY)
N/A - Not Applicable		of Potentia	Concern e	valuated for inf	alation exposu				

N/A = Not Applicable

- (1) Provide equation used for derivation in text.
- (2) For IRIS values, provide the date IRIS was searched.

For HEAST values, provide the date of HEAST.

For NCEA values, provide the date of the article provided by NCEA.

TABLE 5.3

NON-CANCER TOXICITY DATA — SPECIAL CASE CHEMICALS
HORSESHOE ROAD COMPLEX SITE, SAYREVILLE, NEW JERSEY

Chemical of Potential Concern	Chronic/ Subchronic	Value	Units	Primery Terget Organ	Combined UncertaintyModifying Factors	Sources of Primary Target Organ	Date (MM/DD/YY)
A - Not Applica	ble No Specie	l Case Cha	micale eve				
4 - Not Applica	pie. No Specia	i Case Cile	mcais ev	iiuateu.			
	1					1	

TABLE 6.1

CANCER TOXICITY DATA -- ORAL

HORSESHOE ROAD COMPLEX SITE, SAYREVILLE, NEW JERSEY

Oral Cancer Slope Factor	Units	Weight of Evidence/ Cancer Guideline Description	Source	Date (MM/DD/YY
		1		
	-	D	-	-
2.9E-002	(mg/kg/day)-1	A	IRIS	11/09/98
6.2E-002	(mg/kg/day)-1	B2	IRIS	11/09/98
-	-	D	-	-
	-	ם	•	-
] -	-	-	-
1.3E-001	(mg/kg/day)-1	B2	IRIS	11/09/98
	-	D	-	-
2.9E-003	(mg/kg/day)-1		NCEA	10/01/98
6.1E-003	(mg/kg/day)-1	B2	IRIS	11/09/98
1.3E-002	(mg/kg/day)-1	С	HEAST	1997
-	-	С	•	-
9.1E-002	(mg/kg/day)-1	82	IRIS	11/09/98
6.0E-001	(mg/kg/day)-1	С	IRIS	11/09/98
-	-	ם	-	
	•		-	-
	-	D	•	-
6.8E-002	(mg/kg/day)-1	B2	HEAST	1997
1.8E-001	(mg/kg/day)-1	B2	IRIS	11/09/98
-	-	D	-	-
7.5E-003	(mg/kg/day)-1	B2	IRIS	11/09/98
	-	.	-	-
	-	-	-	-
5.2E-002	(mg/kg/day)-1	B2-C	NCEA	10/01/98
2.0E-001	(mg/kg/day)-1	c	IRIS	11/09/98
		D	•	-
	_	D	-	-
5.7E-002	(mg/kg/day)-1	c	IRIS	11/09/98
1.1E-002	(mg/kg/day)-1	B2-C	NCEA	10/01/98
1.9E+000	(mg/kg/day)-1	A .	HEAST	1997
	6.2E-002 1.3E-001 2.9E-003 6.1E-003 1.3E-002 9.1E-002 6.0E-001 7.5E-003 5.2E-002 2.0E-001 5.7E-002 1.1E-002	6.2E-002 (mg/kg/day)-1 1.3E-001 (mg/kg/day)-1 2.9E-003 (mg/kg/day)-1 6.1E-003 (mg/kg/day)-1 9.1E-002 (mg/kg/day)-1 6.0E-001 (mg/kg/day)-1	Description 2.9E-002 (mg/kg/day)-1 A 8.2E-002 (mg/kg/day)-1 B2 - D - D 1.3E-001 (mg/kg/day)-1 B2 2.9E-003 (mg/kg/day)-1 B2 6.1E-003 (mg/kg/day)-1 B2 1.3E-002 (mg/kg/day)-1 C 9.1E-002 (mg/kg/day)-1 B2 6.0E-001 (mg/kg/day)-1 C - D 6.8E-002 (mg/kg/day)-1 B2 1.8E-001 (mg/kg/day)-1 B2 1.8E-001 (mg/kg/day)-1 B2 1.8E-001 (mg/kg/day)-1 B2 5.2E-002 (mg/kg/day)-1 B2 - D 7.5E-003 (mg/kg/day)-1 B2 - D 5.2E-002 (mg/kg/day)-1 C - D 5.7E-002 (mg/kg/day)-1 C - D 5.7E-002 (mg/kg/day)-1 C - D 5.7E-002 (mg/kg/day)-1 C - D 5.7E-002 (mg/kg/day)-1 C - D 5.7E-002 (mg/kg/day)-1 C	Description D

TABLE 6.1

CANCER TOXICITY DATA -- ORAL

HORSESHOE ROAD COMPLEX SITE, SAYREVILLE, NEW JERSEY

Chemical	Oral Cancer Slope Factor	Units	Weight of Evidence/	Source	Date
of Potential			Cancer Guideline		(MM/DD/YY)
Concern			Description		1
Semivolatile Organics					
Acenaphthene	-	-	-	-	-
Acenaphthylene	•	-	D	-	-
Anthracene	-	-	D	-	-
Benzo(a)anthracene	7.3E-001	(mg/kg/day)-1	B2	IRIS*	11/09/98
Benzo(a)pyrene	7,3E+000	(mg/kg/day)-1	B2	IRIS	11/09/98
Benzo(b)fluoranthene	7.3E-001	(mg/kg/day)-1	B2	IRIS*	11/09/98
Benzo(g,h,i)perylene	-	-	D	-	-
Benzo(k)fluoranthene	7.3E-002	(mg/kg/day)-1	B2	IRIS*	11/09/98
Bis(2-chloroethyl)ether	1.1E+000	(mg/kg/day)-1	B2	IRIS	11/09/98
Bis(2-ethylhexyl)phthalate	1.4E-002	(mg/kg/day)-1	B2	IRIS	11/09/98
Butylbenzyl phthalate	-	-	C	-	-
Carbazole	2.0E-002	(mg/kg/day)-1	B2	HEAST	1997
4-Chloroaniline		-	•	-	
2-Chloronaphthalene	-			-	
Chrysene	7.3E-003	(mg/kg/day)-1	B2	IRIS*	11/09/98
Dibenzo(a,h)anthracene	7.3E+000	(mg/kg/day)-1	B2	IRIS	11/09/98
Dibenzofuran	-	-	D	-	
Di-n-butyl phthalate		-	D	-	
1,2-Dichlorobenzene		-	D	-	-
1,3-Dichlorobenzene		-	D	-	-
,4-Dichlorobenzene	2.4E-002	(mg/kg/day)-1	c	HEAST	1997
2,4-Dichlorophenol	-	-		-	-
Diethyl phthalate	-	-	D	-	-
2,4-Dimethylphenol	-	-		-	
2,4-Dinitrotoluene	-	-	-	-	-
Di-n-octyl phthalate	-		l o 1	•	-

TABLE 6.1

CANCER TOXICITY DATA -- ORAL

HORSESHOE ROAD COMPLEX SITE, SAYREVILLE, NEW JERSEY

Chemical	Oral Cancer Slope Factor	Units	Weight of Evidence/	Source	Date
of Potential	ļ		Cancer Guideline		(MM/DD/YY
Concern			Description		
Semivolatile Organics (Confd)					
Fluoranthene	-	-	D	-	-
Fluorene		-	D	•	-
Hexachlorobutadiene	7.8E-002	(mg/kg/day)-1	c	IRIS	11/09/98
Hexachlorocyclopentadlene		-	D	•	-
Hexachloroethane	1.4E-002	(mg/kg/day)-1	c	IRIS	11/09/98
Indeno(1,2,3-cd)pyrene	7.3E-001	(mg/kg/day)-1	B2	IRIS*	11/09/98
Isophorone	9.5E-004	(mg/kg/day)-1	С	IRIS	11/09/98
2-Methylnaphthalene		-	-	-	-
2-Methylphenol	-	-	С	-	-
4-Methylphenoi	-	-	С	-	-
Naphthalene	-	-	D	-	-
Nitrobenzene	-	-	D	-	
n-Nitrosodiphenylamine	4.9E-003	(mg/kg/day)-1	B2	IRIS	11/09/98
2-Nitrophenol	-	-	D	-	-
4-Nitrophenol	-] -]	-	
Pentachlorophenol	1.2E-001	(mg/kg/day)-1	82	IRIS	11/09/98
Phenanthrene		-	ם	-	-
Phenol			D	-	-
Pyrene		_	ס	•	-
1,2,3-Trichlorobenzene		-	D	-	-
1,2,4-Trichlorobenzene	-	-	D	-	-
2,4,6-Trichlorophenol	1.1E-002	(mg/kg/day)-1	B2	IRIS	11/09/96
2,4,5-Trichlorophenol	•	-	.	-	

TABLE 6.1

CANCER TOXICITY DATA -- ORAL

HORSESHOE ROAD COMPLEX SITE, SAYREVILLE, NEW JERSEY

Chemical of Potential Concern	Oral Cancer Slope Factor	Units	Weight of Evidence/ Cancer Guideline Description	Source	Date (MM/DD/YY)
Pesticides/PCBs	the state of the s	}	Description		1
Aldrin	1.7E+001	(mg/kg/day)-1	B2	IRIS	11/09/98
4.4'-DDD	2.4E-001	(mg/kg/day)-1	B2	IRIS	11/09/98
4.4'-DDE	3.4E-001	(mg/kg/day)-1	B2	IRIS	11/09/98
4.4'-DOT	3.4E-001	(mg/kg/day)-1	B2	IRIS	11/09/98
alpha-BHC	6.3E+000	(mg/kg/day)-1	B2	IRIS	11/09/98
beta-BHC	1.8E+000	(mg/kg/day)-1	c	IRIS	02/15/98
delta-BHC	1.52.000	(mg/kg/cay)=1	D		02/13/30
gamma-BHC (Lindane)	1.3E+000	(mg/kg/day)-1	B2-C	HEAST	1997
alpha-Chlordane	3.5E-001	(mg/kg/day)-1	B2	IRIS (4)	11/09/98
gamma-Chlordane	3.5E-001	(mg/kg/day)-1	B2	IRIS (4)	11/09/98
Dieldrin	1.6E+001	(mg/kg/day)-1	B2	IRIS	11/09/98
Endosulfan I				(5)	
Endosulfan II			_	(5)	_
Endrin	_		D	-	
Endrin Aldehyde	_]	•	
Endrin Ketone	<u>-</u>	_	. 1	•	_
Heptachlor	4.5E+000	(mg/kg/day)-1	B2	IRIS	11/09/98
Heptachlor Epoxide	9.1E+000	(mg/kg/day)-1	B2	IRIS	11/09/98
Methoxychlor	_		D	-	-
PCBs: Aroclor 1242	2.0E+00 (soil/food); 4.0E-01 (water)	(mg/kg/day)-1	B2	IRIS	11/09/98
Aroclor 1248	2.0E+00 (soil/food); 4.0E-01 (water)	(mg/kg/day)-1	B2	IRIS	11/09/98
Aroclor 1254	2.0E+00 (soil/food); 4.0E-01 (water)	(mg/kg/day)-1	B2	IRIS	11/09/98
Aroclor 1280	2.0E+00 (soil/food); 4.0E-01 (water)	(mg/kg/day)-1	B2	IRIS	11/09/98
Dioxin			[
2,3,7,8-TCDD	1.5E+005	(mg/kg/day)-1	B2	HEAST	1997

TABLE 6.1

CANCER TOXICITY DATA -- ORAL

HORSESHOE ROAD COMPLEX SITE, SAYREVILLE, NEW JERSEY

Chemical	Oral Cancer Slope Factor	Units	Weight of Evidence/	Source	Date
of Potential			Cancer Guideline		(MM/DD/YY)
Concern	<u> </u>		Description		
Inorganics					
Aluminum	-	-		•	-
Antimony			-	-	. -
Arsenic	1.5E+000	(mg/kg/day)-1	A .	IRIS	11/09/98
Barium		-	-	•	-
Beryllium	-	-	B1	IRIS	11/09/98
Cadmium		-	B1	-	-
Chromium III (insolublesalts)		-	D	-	-
Chromium VI	-	-	A	-	
Cobalt	-	-	-	-	-
Copper	-	-	a	-	-
Cyanide	•	-	D	-	-
Lead (and compounds-inorg.)**		-	B2	-	-
Manganese	-	-	D (-	-
Mercury		-	D	-	
Nickel (soluble salt)	-	-		-	_
Selenium (and compounds)		-	ם	•	-
Silver		•	D	-	-
Thallum	-	•	D	-	-
Vanadium	-	-	ם	-	-
Zinc (and compounds)			D	•	1 .

- Calcium, fron, magnesium, potassium, and sodium are considered essential nutrients and will not be quantitatively evaluated in the risk assessment.
- *Relative potency values were used in conjunction with the benzo(a)pyrene oral slope factor per USEPA Guidance (July) (USEPA, 1993a).
- **Since no carcinogenic toxicity values are currently established for lead, only a qualitative evaluation of this chemical can be performed. The USEPA's Revised Interim Soll Guidance for CERCLA Sites and RCRA Corrective Action Facilities, OSWER Directive 9355.4-12, recommends acreening levels for soil of 400 ppm residential land use (USEPA, 1994). New Jersey's Drinking Water and Ground Water Update recommends an action level for lead in drinking water of 15 ug/l (USEPA, 1993).
- (1) All toxicity values were obtained from IRIS (on-line November 9, 1998) unless otherwise noted.
- (2) Toxicity values were obtained from HEAST Annual FY-1997.
- (3) Toxicity values were obtained from the National Center for Environmental Assessment. EPA Region III Risk-based Concentration (RBC) Table 10/1/96.
- (4) The carcinogenic toxicity values for technical chlordane are reported, as the individual alpha and gamma-chlordane isomers do not have established carcinogenic toxicity levels.
- (5) No carcinogenic toxicity values are currently established for endosulfan or its isomers endosulfan I and endosulfan II.

EPA Group:

- A Human carcinogen
- 81 Probable human carcinogen Indicates that limited human data are available
- B2 Probable human carcinogen indicates sufficient evidence in animals and inadequate or no evidence in humans
- C Possible human carcinogen
- D Not classifiable as a human carcinogen
- E Evidence of noncarcinogenicity

Weight of Evidence:

Known/Likely
Cannot be Determined
Not Likely

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TABLE 6.2 CANCER TOXICITY DATA -- INHALATION HORSESHOE ROAD COMPLEX SITE, SAYREVILLE, NEW JERSEY

Chemical of Potential Concern	Unit Risk	Units	Adjustment	Inhalation Cancer Slope Factor	Units	Weight of Evidence/ Cancer Guideline Description	Source	Date (1) (MM/DD/YY)
/A - Not Applicable. N	Chemicals of Potential Con	cern evaluted for	inh sisti on exposures.					

IRIS = Integrated Risk Information System

HEAST= Health Effects Assessment Summary Tables

Weight of Evidence:

Known/Likely

Cannot be Determined

Not Likely

(1) For IRIS values, provide the date IRIS was searched.

For HEAST values, provide the date of HEAST.

For NCEA values, provide the date of the article provided by NCEA.

EPA Group:

- A Human carcinogen
- B1 Probable human carcinogen indicates that limited human data are available
- B2 Probable human carcinogen Indicates sufficient evidence in animals and inadequate or no evidence in humans
- C Possible human carcinogen
- D Not classifiable as a human carcinogen
- E Evidence of noncarcinogenicity

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TABLE 6.3 CANCER TOXICITY DATA -- SPECIAL CASE CHEMICALS HORSESHOE ROAD COMPLEX SITE, SAYREVILLE, NEW JERSEY

of Potential		t .	1	
		1	1	MMDDMY
Concern				
				.: .
A - Not Applicable. No Specia	i Casa Chemicale evaluated			
4 - Not Applicable. No opecia	Case Onelincals Evaluated	•		
		•		
1			1	i

(1) For IRIS values, provide the date IRIS was searched.

For HEAST values, provide the date of HEAST.

For NCEA values, provide the date of the article provided by NCEA.

TABLE 7 1 RME
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
HORSESHOE ROAD COMPLEX SITE, SAYREVILLE, NEW JERSEY

Scenario Timetrame: Current and Future
Medium: Soil

Exposure Medium: Surface Soil
Exposure Point AOC 1 - HRDD

Receptor Population: Area Residents (Trespassars)

Receptor Age: Youth (12-17 years)

Exposure	Chemical	Medium	Medium	Route	Route	EPC	Intake	Intake	Reference	Reference	Reference	Reference	Hazerd
Route	of Potential	EPC	EPC	EPC	EPC	Selected	(Non-Cancer)	(Non-Cancer)	Dose (2)	Dose Units	Concentration	Concentration	Quotie
	Concern	Value	Units	Value	Units	for Heamed	Į,	Units			ļ	Units	
			, ,			Calculation (1)		i i					
gestion	Dieldrin	120	ughg	120	ug/kg	M	7 2E-009	mg/kg-day	5.0E-005	mg/kg-day	NVA	NZA	1.4E-00
	Aroclor-1248	9500	ug/kg	9500	ug/kg	M	5 7E-007	mg/kg-day		mg/kg-clay	N/A	N/A	
	Aroctor-1254	850	ug/kg	850	ug/kg	м	5 1E-008	mg/kg-day	2.0E-005	mg/kg-day	N/A	N/A	2 6E-0
	Aroclor-1260	720	ug/kg	720	ug/kg	M	4.3E-008	mg/kg-day	-	mg/kg-day	N/A	N/A	
	Aluminum	14250	mg/kg	14250	mg/kg	м	8 6E-004	mg/kg-day	1.0E+000	mg/kg-day	N/A	N/A	8.6E-0
	Antimony	3.4	mg/kg	3.4	mg/kg	м	2.0E-007	mg/ktp-day	4 0E-004	mg/kg-day	N/A	NA	5 1E-0
	Arsenic	53	mg/kg	53	mg/kg	м	3 2E-006	mg/kg-day	3.0E-004	mg/kg-day	N/A	N/A	1.1E-0
	Cadmium	4.5	mg/kg	4.5	mg/kg	M	2.7E-007	mg/kg-day	1.0E-003	mg/kg-day	N/A	N/A	2 7E-0
	Copper	433	mg/kg	433	mg/kg	М	2 6E-005	mg/kg-day	4.0E-002	mg/kg-day	N/A	N/A	6.5E-0
	Manganese	420	mg/kg	420	mg/kg	м	2 5E-005	mg/kg-day	2.4E-002	mg/kg-tlay	N/A	N/A	1 1E-0
	Nickel	108	mg/kg	108	mg/kg	M	6.5E-006	mg/kg-day	2 0E-002	mg/kg-day	N/A	N/A	3 2E-0
	Silver	30	mg/kg	30	mg/kg	м	1.8E-008	mg/kg-day	5.0E-003	mg/kg-day	N/A	N/A	3 6E-0
	Thallum	1	mg/kg	1	mg/kg	М	6.0E-008	mg/kg-day	7.0E-005	mg/kg-day	N/A	N/A	8.6E-0
	Vanadum	64	mg/kg	84	mg/kg	м	3.8E-008	mg/kg-day	7.0E-003	mg/kg-day	N/A	N/A	5.5E-0
	(Total)		1 1)			1		i	Ì	}	1.9E-Ö
rmal	Dieldrin	120	ug/kg	120	ug/kg	M	t 8E-008	mg/kg-day	5 0E-005	mg/kg-day	NA	N/A	3 6E-0
	Arodor-1248	9500	ugfig	9500	ug/kg	M	2.0E-008	mg/kg-day	-	mg/kg-day	N/A	N/A	_
	Aroctor-1254	850	ug/kg	850	ugfkg	M	1 8E-007	mg/kg-day	2 0€-005	mg/kg-day	N/A	N/A	8 9E-0
	Arodor-1280	720	ughg	720	ug/kg	M	1 5E-007	mg/kg-day	l –	mg/kg-day	N/A	N/A	
	Aluminum	14250	mg/kg	14250	mg/kg	M	2.1E-004	mg/kg-day	1.0E+000	mg/kg-day	N/A	N/A	2.1E-0
	Antimony	3.4	mg/kg	3.4	mg/kg	M	5.1E-008	mg/kg-day	4 0E-004	mg/kg-day	N/A	N/A	1 3E-0
	Arsenic	53	mg/kg	53	mg/kg	M	2 4E-008	mg/kg-day	3 0E-004	mg/kg-day	N/A	N/A	8.0E-0
	Cadvilum	4.5	mg/kg	4.5	mg/kg	M	8.8E-009	mg/kg-day	1 DE-003	mg/kg-day	N/A	N/A	6.8E-0
	Copper	433	mg/kg	433	mg/kg	M	6 5E-006	mg/kg-day	4 0E-002	mg/kg-day	N/A	N/A	1 8E-0
	Mangenese	420	mg/kg	420	mg/kg	м	6.3E-006	mg/kg-day	2.4E-002	mg/kg-day	NA	N/A	2.6E-0
	Nickel	108	mg/kg	108	mg/kg	M	1.8E-008	mg/kg-day	2.0E-002	mg/kg-day	NA	N/A	8 1E-0
	Silver	30	mgAig	30	mg/kg	M	4 5E-007	mg/kg-day	5.0E-003	mg/kg-day	NA	NA	9 0E-0
	Thellum	1	mg/kg	1	mg/kg	M	1 5E-008	mg/kg-day	7 0E-005	mg/kg-day	N/A	N/A	2 1E-0
	Venedium	64	mgAss	64	make	M I	9 6E-007	mp/kg-day	7.0E-003	mg/kg-day	N/A	N/A	1.4E-0
	(Total)		1			1	[]		i	1	1	ì	1 9E

⁽¹⁾ Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

⁽²⁾ Chronic

⁻⁻⁻ Reference Dose not available, therefore Hazard Quotient not calculated

N/A - Not Applicable

TABLE 7.1 RME CALCULATION OF NON-CANCER HAZARDS REASONABLE MAXIMUM EXPOSURE HORSESHOE ROAD COMPLEX SITE, SAYREVILLE, NEW JERSEY

Scerario Timeliame Current and Future

Medium: Soil

Exposure Medium: Surface Soil

Exposure Point AOC 2 - ADC

Receptor Population: Area Residents (Trespassers)

Receptor Age Youth (12-17 years)

Exposure	Chemical	Medium	Medium	Route	Route	EPC	Intoke	Intake	Reference	Reference	Reference	Reference	Hazard
Route	of Potertial	EPC	EPC	EPC	EPC	Selected	(Non-Cancer)	(Non-Cancer)	Dose (2)	Dose Units	Concentration	Concentration	Quotien
	Concern	Value	Units	Value	Units	for Hazard		Units			:	Units	
						Calculation (1)				Ì]	
estion	Benzo(a)anthracene	21000	ug/kg	21000	ug/kg	 	1 3E-006	mg/kg-dey		mg/kg-day	N7A	N/A	======================================
	Benzo(b)fluoranthene	30000	ugArg	30000	ug/kg	M	1.8E-006	mg/kg-dey	-	mg/kg-day	N/A	N/A	
	Benzo(a)pyrene	20000	ug/kg	20000	ug/kg	J M	1.2E-006	mg/kg-dey	-	mg/kg-day	N/A	N/A	
	Indeno(1,2,3-cd)pyrene	12000	ug/kg	12000	ug/kg	M	7.2E-007	mg/kg-dey	-	mg/kg-dey	N/A	N/A	
	Dibergo(a,h)arthracene	2300	ug/kg	2300	ug/kg	M	1.4E-007	mg/kg-day	 -	mg/kg-day	N/A	N/A	
	Aldrin	400	ug/kg	400	ug/kg	M	2.4E-008	mg/kg-day	3 0E-005	mg/kg-day	N/A	N/A	8 0E-00
	Dieldrin	740	ug/kg	740	ug/kg	M	4 4E-008	mg/kg-day	5 0E-005	mg/kg-day	N/A	N/A	8 9E-00
	Methoxychlar	980000	ug/kg	980000	ugAtg	M	5 9E-005	mg/kg-dey	5 0E-003	mg/kg-day	N/A	N/A	1.2E-00
	Arodor-1248	34000	ugAig	34000	ug/kg	M	2 0E-006	mg/kg-day	-	mg/kg-day	N/A	N/A	
	Arodor-1260	2500	ug/kg	2500	ug/kg	M	1.5E-007	mg/kg-dey	-	mg/kg-day	N/A	N/A	
	2,3,7,8-TCDD equiv.	0 308	ug/kg	0 308	ug/kg	M	1.8E-011	mg/kg-day	\ -	mg/kg-day	N/A	N/A	
	Antimony	32	mg/kg	32	mg/kg	M	1.9E-006	mg/kg-day	4 0E-004	mg/kg-day	N/A	N/A	4 8E-00
	Arseric	3840	mgArg	3840	mg/kg	M	2.2E-004	mg/kg-dey	3 0E-004	mg/kg-day	N/A	N/A	7 3E-00
	(Tot				- -				ļ	ļ			7 5E-00
mal	Benzo(s)entracene	21000	ug/kg	21000	ug/kg	M	4 1E-008	mg/kg-day		mg/kg-day	N/A	N/A	
	Benzo(b)fluoranthene	30000	ug/kg	30000	ug/kg	M	5.9E-006	mg/kg-day	-	mg/kg-day	N/A	N/A	-
	Benzo(a)pyrene	20000	ug/kg	20000	ug/kg	M	3 9E-006	mg/kg-day	\ -	mg/kg-day	N/A	N/A	
	Indeno(1,2,3-cd)pyrene	12000	ug/kg	12000	ug/kg	M	2 3E-006	mg/kg-day	-	mg/kg-day	N/A	N/A	
	Dibenzo(a,h)erthracene	2300	ug/kg	2300	ug/kg	M	4 5E-007	mg/kg-day	-	mg/kg-day	N/A	N/A	
	Aldrin	400	ug/kg	400	ug/kg	M	6 0E-006	mg/kg-day	3 0E-005	mg/kg-day	N/A	N/A	2 0E-00
	Dielahin	740	ug/kg	740	ug/kg	м	1 1E-007	mg/kg-day	5 0E-005	mg/kg-day	N/A	N/A	2 2E-00
	Methoxychlar	960000	ug/kg	980000	ug/kg	M	1.5E-004	mg/kg-day	5 0E-003	mg/kg-day	N/A	N/A	2 9E-00
	Arodor-1248	34000	ug/kg	34000	ug/kg	M	7 1E-006	mg/kg-dey	\ -	mg/kg-day	N/A	N/A	
	Arodor-1260	2500	ug/kg	2500	ug/kg	M	5 3E-007	mg/kg-dey	_	mg/kg-day	N/A	N/A	
	2,3,7.8-TCDD equiv	0.308	ug/kg	0 308	ug/kg	M	1 4E-011	mg/kg-day	-	mg/kg-day	N/A	N/A	
	Artimony	32	mg/kg	32	mg/kg	M	4 8E-007	mg/kg-dey	4 0E-004	mg/kg-day	N/A	N/A	1 2E-00
	Arseric	3640	mg/kg	3640	mg/kg	M	1 6E-004	mg/kg-day	3 0E-004	mg/kg-day	N/A	N/A	5 5E-0
	(Total	and I			1]	li .	1	1	1	I	i	5 8E-00

⁽¹⁾ Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

 \cdots - Reference Dose not available, therefore Hazard Quotient not calculated N/A - Not Applicable

⁽²⁾ Chronic

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TABLE 7.1.CT CALCULATION OF NON-CANCER HAZARDS CENTRAL TENDENCY EXPOSURE HORSESHOE ROAD COMPLEX SITE, SAYREVILLE, NEW JERSEY

Scenario Timeframs: Current and Puture Medium: Soil

Exposure Medium: Surface Soll Exposure Point: AOC 2 - ADC

Receptor Population: Area Residents (Trespessors) Receptor Aga: Youth (12-17 years)

Exposure	Chemical	Medum	Medium	Route	Route	EPC	Intake	Intake	Reference	Reference	Reference	Reference	Heamrd
Route	of Potential	EPC	EPC	EPC :	EPC	Selected	(Non-Cancer)	(Non-Cancer)	Dose (2)	Dose Units	Concentration	Concentration	Quotien
	Concern	Value	Units	Value	Units	for Heaserd		Units				Unite	
						Calculation (1)							
potion	Benzo(a)ardivacene	4534	ug/kg	4534	ugfig	<u>m</u> .	2.7E-007	mg/kg-day	-	mg/kg-day	N/A	N/A	F
	Benzo(b)fluoranthene	7941	ugftg	7841	ugfkg	M	4.7E-007	mg/kg-day	-	mg/kg-day	N/A	N/A	-
	Benzo(a)pyrene	5343	ugAg	5343	ugfig	M	3.2E-007	mg/kg-day	-	mg/kg-day	N/A	N/A	-
	Indano(1,2,3-od)pyrene	3251	ugfig	3251	ugfig	M	2.0E-007	mg/kg-day	-	mg/lig-day	N/A	NYA	-
	Dibenzo(s,h)enthracens	2532	ugfig	2532	ирћа	M	1.5E-007	mg/kg-day	-	mg/kg-day	N/A	N/A	-
	Aldrin	114	ugfig	114	ug/kg	M	6.8E-009	mg/kg-day	3.0E-006	mg/kg-day	N/A	N/A	2.3E-00
	Diekhin	200	ugftg	200	ugfig	M	1.2E-006	mgftg-day	5.0E-005	mg/kg-day	N/A	N/A	2.4E-00
	Methoxychior	72823	ugfig	72823	ugfig	M	4.4E-006	mg/kg-day	5.0E-003	mgfkg-day	N/A	N/A	8.7E-00
	Arodor-1248	7359	ugAig	7359	ug/kg	M	4.4E-007	mgfkg-day	-	mg/kg-day	N/A	N/A	-
	Arector-1280	1500	ugfig	1500	ugftg	M	9.0E-008	IngRig-day	-	mg/kg-day	N/A	N/A	-
	2,3,7,8-TCDD equiv.	0.15	ugfkg	0.15	ugfig	M	9.0E-012	mg/kg-day	-	mg/kg-day	N/A	N/A	-
	Antimony	2.7	mg/kg	2.7	mg/kg	M	1.6E-007	mg/kg-day	4.0E-004	mg/kg-day	N/A	N/A	4.1E-00
	Areenic	46	mg/kg	46	mg/kg	M	2.8E-006	mg/kg-day	3.0E-004	mg/kg-day	N/A	N/A	9.2E-00
	(Total	0	L			1					<u> </u>		1.1E-00
mal	Beruo(a)anthracene	4534	ug/to	4534	ugfig	M T	8.8E-007	mg/kg-day	-	mg/leg-day	N/A	N/A	-
	Benzo(b)fluoranthene	7841	upfug	7841	ugfkg	M	1.5E-008	mg/kg-day	-	mg/kg-day	N/A	. N/A	-
	Benzo(a)pyrene	5343	ugfig	5343	ug/kg	M	1.0E-006	mg/kg-day	-	mg/kg-day	N/A	N/A	-
	Indano(1,2,3-od)pyrene	3251	ugfig	3251	ugrleg	M	6.3E-007	mg/kg-day	l -	mg/kg-day	N/A	N/A	-
	Dibenzo(s,h)enthrecene	2632	ugfig	2532	ugfig	M	4.9E-007	mg/kg-day	-	mg/kg-day	N/A	N/A	-
	Aldfin	114	ugfig	114	ugfig	M	1.7E-008	mg/kg-day	3.0E-005	mg/kg-day	N/A	N/A	5.7E-00
	Dieldrin	200	ug/kg	200	ugfig	M	3.0E-008	mg/kg-day	5.0E-005	mg/kg-day	N/A	N/A	6.0E-00
	Methoxychlor	72823	ugfeg	72623	ugfig	M	1.1E-005	mg/kg-day	5.0E-003	mg/kg-day	N/A	N/A	2.2E-00
	Aroclor-1248	7359	ugfig	7359	ugfig	M	1.5E-008	mg/kg-day	-	mg/kg-day	N/A	N/A	-
	Arodor-1280	1500	ugfig	1500	ugfig	M	3.2E-007	mg/kg-day	-	mg/kg-day	N/A	N/A	-
	2,3,7,8-TCDD equiv.	0.15	ugfig	0.15	ugfig	M	6.8E-012	mg/kg-day	-	mg/kg-day	N/A	N/A	-
	Artimony	2.7	mg/kg	2.7	mg/kg	M	4.1E-008	mg/kg-day	4.0E-004	mg/kg-day	NA	N/A	1.0E-0
	Areenic	46	mg/kg	46	mgfkg	M	2.1E-008	mg/kg-day	3.0E-004	mg/kg-day	N/A	N/A	8.9E-0
	(Total) <u>l. </u>	I			1	1	1		1		İ	1.0E-00

⁽¹⁾ Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

⁽²⁾ Chronic.

⁻⁻ Reference Dose not evallable, therefore Hazard Quotient not calculated.

N/A - Not Applicable.

TABLE 7.1 RME
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMAM EXPOSURE
HORSESHOE ROAD COMPLEX SITE. SAYREVILLE, NEW JERSEY

Scenario Timeframe: Current and Future

Medium: Soll

Explosure Medium: Surface Soll

Exposure Point: AOC 3 - SPD

Receptor Population: Area Residents (Trespassers)

Receptor Age: Youth (12-17 years)

Exposure	Chemical	Medum	Medium	Route	Route	EPC	intake	Intake	Reference	Reference	Reference	Reference	Hazard
Route	of Potential	EPC	EPC	EPC	EPC	Selected	(Non-Caricer)	(Non-Cancer)	Dose (2)	Dose Units	Concentration	Concentration	Quotie
	Concern	Value	Units	Value	Units	for Heaterd		Units		1		Unite	l
						Calculation (1)					l		
estion	Benzo(a)enthracene		ugAug	1701	ug/kg		1 0E-007	mg/kg-dey	ana de n	mg/Lj-day	N/X	N/A	
	Benzorbifuoranthene	2883	ugAg	2883	uafka	M	1 7E-007	mg/kg-dey	-	mg/kg-day	N/A	N/A	-
	Benap(a)pyrene	1488	ugfig	1468	ugfkg	м	8 8E-008	mg/kg-day	_	marka-day	N/A	N/A]
	Indeno(1,2,3-cd)pyrene	1302	ugfkg	1302	ug/kg	м	7 8E-008	mg/kg-day		mg/kg-day	N/A	N/A	
	Methoxychior	950000	ugfkg	650000	ug/kg	M	3 9E-005	mg/kg-day	5.0E-003	mo/kg-day	N/A	N/A	7.8E-0
	Alaminum	8432	mg/kg	8432	mg/kg	M	5 1E-004	mg/kg-day	1.0E+000	mg/kg-day	N/A	N/A	5 1E-0
	Antimony	17	mg/kg	17	marka	M	1.0E-006	mg/kg-day	4 0E-004	mg/kg-day	N/A	N/A	2 8E-0
	Arsenic	24	mg/kg	24	mg/kg	м	1.4E-006	mg/kg-day	3.0E-004	mg/kg-day	N/A	N/A	4.8E-0
	Copper	1519	mg/kg	1519	mg/kg	M I	9 1E-005	mg/kg-day	4.0E-002	mg/kg-day	N/A	N/A	2 3E-0
	Manganese	215	mg/kg	215	mg/kg	M	1.3E-005	mg/kg-day	2 4E-002	mg/kg-day	N/A	NA	5 4E-0
	Theffum	0.02	mg/kg	0.92	mg/kg	м	5.5E-008	mg/kg-day	7 0E-005	mg/kg-day	N/A	N/A	7 9E-0
	Vanedum	37	mgfkg	37	mg/kg	м	2.2E-008	mg/kg-day	7.0E-003	mg/kg-day	N/A	N/A	3 2E-0
	(Tot	et)			l	l							2 0E-0
mal	Benzo(a)entivacene	1701	ugfig	1701	ugfig	M	3 3E-007	mg/kg-day		mg/kg-day	N/A	N/A	-
	Benzo(b)fluorenthene	2883	ugfkg	2883	ugfkg	M	5.6E-007	mg/kg-day	-	mg/kg-day	N/A	N/A	-
	Berizo(a)pyrene	1468	ugfkg	1468	ugfkg	M	2.9E-007	mg/kg-day		mg/kg-day) N/A	N/A	
	Indeno(1,2,3-cd)pyrene	1302	ugfig	1302	ugfkg	M	2 5E-007	mg/kg-day		mg/kg-day	N/A	NVA	-
	Methoxychior	650000	ughq	650000	vg/kg	M	9 8E-005	mg/kg-day	5.0E-003	mg/kg-day	NYA	NA	2 0E-0
	Aluminum	8432	mg/kg	8432	mg/kg	M	1.3E-004	mg/kg-day	1 0E+000	mg/kg-day	NYA	NA	1 3E-0
	Antimony	17	mg/kg	17	mg/kg	M	2 6E-007	mg/kg-day	4.0E-004	mg/kg-day	N/A	N/A	6 4E-0
	Areenic	24	mg/kg	24	mg/kg	M	1 1E-008	mg/kg-day	3.0E-004	mg/kg-day	N/A	NVA	3 6E-0
	Copper	1519	mg/kg	1519	mg/kg	M	2 3E-005	mg/kg-day	4 0€-002	mg/kg-day	N/A	N/A	5 7E-0
	Manganese	215	mg/kg	215	mgfkg	M	3.2E-006	mg/kg-day	2 4E-002	mg/kg-day	NA	N/A	1 3E-0
	Theflum	0.92	mg/kg	0.92	mg/kg	M	1 4E-008	mg/kg-day	7.0E-005	mg/kg-day	N/A	NVA	2 0E-0
	Vanedum	37	mg/kg	37	mg/kg	M	5 8E-007	mg/kg-day	7.0E-003	mg/kg-day	NA	NA	7 9E-0
	(Tot	■f) {	1	1		l		J.,				1	2.5E-0

⁽¹⁾ Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

⁽²⁾ Chronic.

⁻⁻ Reference Dose not available, therefore Hazard Quotient not calculated.

N/A - Not Applicable

TABLE 7.1 RME CALCULATION OF NON-CANCER HAZARDS REASONABLE MAXIMUM EXPOSURE HORSESHOE ROAD COMPLEX SITE, BAYREVILLE, NEW JERSEY

Scenerio Timeframe: Current and Future

Medium: Soil

Exposure Medium: Surface Soil

Exposuré Point: AOC 4 - ARC

Receptor Population: Area Residents (Trespassers)

Receptor Age: Youth (12-17 years)

Exposure	Chémical	Medum	Medium	Route	Route	EPC	Intake	Intake	Reference	Reference	Reference	Reference	Hazard
Route	of Potential	EPC	EPC	EPC	EPC	Selected	(Non-Cancer)	(Non-Cancer)	Dose (2)	Dose Units	Concentration	Concentration	
	Cohcern	Value	Units	Value	Units	for Hazerti Calculation (1)	, , , , , ,	Units	2024(1)		Concentration	Units	Quotier
pestion	Benzo(b)fluoranthetie	2800	ugfkg	2600	ugfkg	mer. M	1.6E-007	mg/kg-day		mg/kg-day	NVA	NZA	· · · · · · · · · · · · · · · · · · ·
	Benzo(a)pyrene	1800	ugfkg	1800	ugfkg	M	1.1E-007	mg/kg-day	_	mg/kg-day	N/A	N/A	_
	Hexachlorobutadiene	6800	ug/kg	6800	ug/kg	м	4 1E-007	mg/kg-day	2 0E-004	mg/kg-day	N/A	N/A	2.0E-00
	Hexachlorocyclopentacliene	57440	ugfkg	57440	ug/kg	M	3.4E-008	mg/kg-day	7.0E-003	mg/kg-day	N/A	N/A	4 9E-00
	Aktrin	22	ug/kg	22	ug/kg	M	1.3E-009	mg/kg-day	3.0E-005	mg/kg-day	N/A	NA	4 4E-00
	Aroclor-1248	891	ug/kg	891	ugfkg	M	5 3E-008	mg/kg-day	_	mg/kg-day	NA	N/A	
	Araclor-1254	1941	ug/kg	1941	ugfkg	M	1.2E-007	mg/kg-day	2.0E-005	mg/kg-day	NA	NA	5 8E-00
	Aroclor-1260	465	ug/kg	465	ug/kg	M	2.8E-008	mg/kg-day	-	mg/kg-day	N/A	NA	
	2,3,7,8-TCDD equiv.	0.2	ug/kg	0.2	ugfkg	M	1.2E-011	mg/kg-day	_	rr p/kg-day	NA	N/A	
	Aluminum	15500	mg/kg	15500	mg/kg	M	9.3E-004	mg/kg-day	1 0E+000	mg/kg-day	N/A	N/A	9.3E-00
	Antimony	18	mg/kg	18	mg/kg	M	1.1E-008	mg/kg-day	4 0E-004	mg/kg-day	N/A	N/A	2 7E-00
	Arsenic	27	mg/kg	27	mg/kg	, M	1.6E-006	mg/kg-day	3.0E-004	mg/kg-tlay	N/A	N/A	5.4E-00
	Cadmium	37	mgfkg	37	mg/kg	M	2 2E-006	mg/kg-day	1 0E-003	mg/kg-day	N/A	N/A	2 2E-00
	Copper	501	mg/kg	591	mg/kg	M	3.5E-005	mg/kg-day	4.0E-002	mg/kg-day	NVA	N/A	8 9E-00
	Mengenése	461	mg/kg	461	mg/kg	M .	2 8E-005	mg/kg-day	2.4E-002	mg/kg-day	NA	N/A	1 2E-0
	Nickel	296	mg/kg	298	mg/kg	M	1.8E-005	mg/kg-day	2.0E-002	mg/kg-day	N/A	N/A	8.9E-0
	Silver	287	mg/kg	287	mg/kg	ј м	1.7E-005	mg/kg-day	5 0E-003	mg/kg-day	N/A	N/A	3 4E-00
	Thellium	0.72	mg/kg	0 72	mg/kg	M	4 3E-006	mg/kg-day	7.0E-005	mg/kg-day	N/A	N/A	6 2E-0
	Zinc	9172	mg/kg	9172	mg/kg	М	5.5E-004	mg/kg-day	3 0E-001	mg/kg-day	NA	N/A	1.8E-00
	(Tol					1	l						2 8É-Ö
mel	Benzo(b)fluoranthene	2800	ugfkg	2600	ug/kg	M	5.1E-007	mg/lgp-day		mg/kg-day	NVA	" NVA	· _
	Benzo(#)pyrene	1800	ugfig	1800	ug/kg	M	3 5E-007	mg/kg-day	-	mg/kg-day	N/A	N/A	
	Hexachlorobutedene	6800	ug/kg	6800	ugfkg	M	1.0E-008	mg/kg-day	2.0E-004	mg/kg-day	N/A	N/A	5.1E-00
	Hexachlorocyclopetiadiene	57440	ug/kg	57440	ugfkg	M	8 6E-006	mg/kg-day	7.0E-003	mg/kg-day	NA	N/A	1 2E-00
	Aldrin	22	ugfig	22	ug/kg	M	3.3E-009	mg/kg-day	3 0E-005	mg/kg-day	N/A	N/A	1.1E-00
	Aroctor-1248	801	ng/kg	891	ugArg	M	1 9E-007	mg/kg-day	-	mg/kg-day	NA	N/A	
	Aracior-1254	1941	naya	1941	ugfkg	M	4.1E-007	mg/kg-day	2.00-005	mg/kg-day	N/A	N/A	2 0E-00
	Aroctor-1200	465	ug/kg	465	ug/kg	M	9 8E-008	mg/kg-day	-	mg/kg-day	NA	N/A	
	2,3,7,8-TCDD equiv.	0.2	ng/kg	02	ugfig	M	9 0E-012	mg/kg-day		mg/kg-day	N/A	N/A	
	Aluminum	15500	mg/kg	15500	mgfkg	M	2.3E-004	mg/kg-day	1 0E+000	mg/kg-day	N/A	N/A	2 3E-0
	Antimony	18	mg/kg	18	mg/kg	M	2.7E-007	mg/kg-day	4 0E-004	птр/ку-сішу	N/A	N/A	6 8E-0
	Arsenic	27	mg/kg	27	mg/kg	M	1 2E-008	mg/kg-day	3 0E-004	mg/kg-day	N/A	N/A	4 1E-0
	Cadmium	37	mg/kg	37	mgfkg	M	5 6E-008	mg/kg-day	1.0E-003	mg/kg-day	N/A	N/A	5 6E-0
	Copper	591	mg/kg	591	mg/kg	M	8 9E-008	mg/kg-day	4.0E-002	mg/kg-day	N/A	N/A	2 2E-0
	Manganese	461	mgfkg	461	mg/kg	M	6.9E-006	mg/kg-day	2.4E-002	mg/kg-day	N/A	N/A	2 9E-00
	Nickel	298	mg/kg	296	mg/kg	M	4 4E-006	mg/kg-day	2 0E-002	mg/kg-day	NA	N/A	2 2E-00
	Silver	287	mg/kg	287	mg/kg	M	4 3E-008	mg/kg-day	5.0E-003	mg/kg-day	NA	N/A	8 6E-00
	Theflum	0.72	mg/kg	0 72	mg/kg	M	1 16-008	mg/kg-day	7 0E-005	mg/kg-day	NA	N/A	1 5E-00
	Zinc	9172	mg/kg	9172	mg/kg	M	1.4E-004	mg/kg-day	3 0E-001	mg/kg-day	NA	N/A	4 8E-0
	(Total	ah I	1	1	ı	1	l			, , ,		1	3 4É-00

⁽¹⁾ Medium-Specific (M) or Route-Specific (R) EPC selected for hezard calculation.

⁽²⁾ Chronic.

 $[\]dots$ - Reference Dose not available, therefore Hazard Quotient not calculated. N/A - Not Applicable,

TABLE 7 2 RME CALCULATION OF NON-CANCER HAZARDS REASONABLE MAXIMUM EXPOSURE HORSESHOE ROAD COMPLEX SITE. SAVREVILLE, NEW JERSEY

Scenario Timeframe: Current and Future
Medium: Building Meterials
Exposure Medium: Building Materials
Exposure Medium: Building Materials
Exposure Point: AOG 2 - ADC
Receptor Population: Area Residents (Trespessors)
Receptor Age: Youth (12-17 years)

Exposure	Chemical	Medium	Medium	Route	Route	EPC	Intake	Intake	Reference	Reference	Reference	Reference	Hezard
Route	of Potential	EPC	EPC	EPC	EPC	Selected	(Non-Cancer)	(Non-Cancer)	Dose (2)	Dose Units	Concentration	Concentration	Quotier
	Concern	Value	Units	Value	Units	for Hazerd		Units			ł	Units	
			İ	}		Calculation (1)					}		
stion	Benzo(a)enthracene	1100000	ug/kg	1100000	ug/kg	M	6 6E-005	mb/kg-day		mg/kg-day	NX -		
	Benzo(b)Augranthene	1400000	ugArg	1400000	ug/kg	W	8 4E-005	mtg/kg-day	_	mg/kg-day	N/A	NA	
	Benzo(a)pyrene	1100000	ug/kg	1100000	ug/kg	N.	6 6E-005	mg/kg-day		mg/kg-day	N/A	N/A	
	Indeno(1,2,3-cd)pyrene	300000	ug/kg	300000	ugfkg	M	1 8E-005	mg/kg-day	-	mg/kg-day	N/A	N/A	-
	Dibenzo(a,h)enthracene	90000	ug/kg	90000	ug/kg	M	5.4E-008	mg/kg-day		mg/kg-day	N/A	N/A	-
	Naphthalene	320000	ug/kg	320000	ugAcg	M	1 9E-005	mg/kg-day	2 0E-002	mg/kg-day	N/A	NA	9 6E-00
	2-Methylnaphshalene	1100000	ug/kg	1100000	ugfkg	M	6 6E-005	mg/kg-day	2 0E-002	mg/kg-day	N/A	NA	3.3E-00
	Acenaphthene	800000	ug/kg	800000	ugArg	M	4.8E-005	mg/kg-day	6.0E-002	mg/kg-day	N/A	N/A	0.0E-00
	Dibenzofuran	1000000	ug/kg	1000000	ug/kg	j w	6 0E-005	mg/kg-day	4.0E-003	mg/kg-day	NA	NA	1 5E-00
	Fluorene	1800000	⊌g/kg	1600000	ugfkg	M	9 6E-005	mg/kg-day	4 0E-002	mg/kg-day	N/A	NA	2 4E-00
	Fluoranthene	3000000	ug/kg	3900000	ugfkg) M	2 3E-004	mg/kg-day	4.0E-002	mg/kg-day	N/A	N/A	5 9E-00
	Pyrene	2800000	ug/kg	2800000	ug/kg	₩.	1.7E-004	mg/kg-day	3 0E-002	mg/kg-day	N/A	N/A	5 6E-00
	Methoxychlor	150000	uo/ko	150000	uafka	M	9 0E-008	mg/kg-day	5.0E-003	mg/kg-day	NA	N/A	1 8E-00
	Antimony	5.7	mg/kg	5.7	mg/kg	. M	3 4E-007	mg/kg-day	4 DE-004	mg/kg-day	N/A	N/A	0 6E-00
	Arsenic	84	mg/kg	84	mg/kg	M	5 0E-006	rng/kg-day	3 0E-004	mg/kg-day	N/A	N/A	1.7E-00
	Copper	495	mg/kg	495	mg/kg	M	3 0E-005	mg/kg-day	4 DE-002	mg/kg-day	N/A	N/A	7.4E-00
	Manganese	495	mg/kg	495	mg/kg	M	3 DE-005	mb/kg-day	2.4E-002	mg/kg-day	N/A	N/A	1 2E-00
	Thallum	18	mg/kg	1.0	mg/kg	M	1 1E-007	mg/kg-day	7.0E-005	mg/kg-day	N/A	N/A	1 5E-00
	Zinc	3050	mg/kg	3050	Ing/kg	M	1 8E-004	mg/kg-day	3.0E-001	mg/kg-day	N/A	N/A	6.1E-00
mel	(Total Benzo(s)anthracente	1100000	ug/kg	1100000	ugfkg	- N	2 1E-004	mg/kg-day		mg/kg-day	· · · · · · · · · · · · · · · · · · ·	NUA.	5.7E-00
	Benzo(b)fluoranthene	1400000	ug/kg	1400000	ugArg	N N	2.7E-004	mg/kg-day		mg/kg-day	N/A	N/A	
	Benzo(a)pyrene	1100000	ug/kg	1100000	ugArg		2.1E-004	mg/kg-day		mg/kg-day	N/A	N/A	l _
	Indeno(1,2,3-cd)pyrene	300000	ug/kg	300000	ug/kg		5.9E-005	mg/kg-day		mg/kg-day	N/A	N/A	l _
	Dibenzo(a h)anthracene	90000	ug/kg	90000	ugAg	W I	1 8E-005	mg/kg-day		mg/kg-day	NA	NA	_
	Naphthalene	320000	ug/kg	320000	ug/kg		6 2E-005	mg/kg-day	2 0E-002	mg/kg-day	N/A	N/A	3 1E-01
	2-Methylnephthalene	1100000	ug/kg	1100000	ug/kg	M	2 1E-004	mg/kg-day	2 0E-002	mg/kg-day	N/A	N/A	1 1E-00
	Acensphthene	800000	ug/kg	800000	ua/kg	M	1 6E-004	mg/kg-day	6.0E-002	mg/kg-day	N/A	N/A	2 6E-00
	Olbenzoluran	1000000	ug/kg	1000000	ug/kg	M	2 0E-004	mg/kg-day	4 0E-003	mg/kg-day	N/A	N/A	4 9E-00
	Fluorene	1600000	ug/kg	1600000	ug/kg	M	3 1E-004	mg/kg-day	4.0E-002	mg/kg-day	N/A	N/A	7 8E-00
	Fluoranthene	3900000	ug/kg	3900000	uaAka		7 8E-004	mg/kg-day	4.0E-002	mg/kg-day	NA	NA	1 9E-00
	Pyrene	2000000	ug/kg	2900000	ug/kg	ı ii	5 5E-004	mg/kg-day	3 0€-002	mg/kg-day	N/A	N/A	1 8E-0
	Methorychlor	150000	ug/kg	150000	ugfkg		2 3E-005	mg/kg-day	5 DE-003	mg/kg-day	NA	N/A	4 5E-0
	Antimony	57	mg/kg	57	mg/kg		9 SE-008	mg/kg-day	4 0E-004	mg/kg-day	N/A	N/A	2 1E-0
	Arsenic	4	mg/kg	84	mg/kg	- I	3 8E-008	mg/kg-day	3 0E-004	mg/kg-day	N/A	N/A	1.3E-0
	Copper	495	mg/kg	495	mg/kg		7 4E-008	mg/kg-day	4 0E-002	mg/kg-day	N/A	N/A	1 9E-0
	Mangenese	495	mg/kg	495	marka		7 4E-008	mg/kg-day	2 4E-002	mg/kg-day	N/A	N/A	3 1E-0
	Thallum	1.8	1	18			2 7E-008	mg/kg-day	7 0E-005	mg/kg-day	NA	N/A	3 9E-0
	Zine	3050	mg/kg	3050	mg/kg	M	4 6E-005	mg/kg-day	3 0E-001	mg/kg-day	N/A	N/A	1 56-0
	Zine (Tota	t	mg/kg	3030	mg/kg		4 05-003	111GHQ-031Y	3 00-001	ring-ray-cary			1 3E-0

⁽¹⁾ Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation

⁽²⁾ Chronic

⁻⁻⁻⁻ Reference Dose not available, therefore Hazard Quotient not calculated

TABLE 7 2 RME CALCULATION OF NON-CANCER HAZARDS REASONABLE MAXIMUM EXPOSURE HORSESHÖE ROAD COMPLEX SITE: SAVREVILLE, NEW JERSEY

Scenerio Timeframe: Current and Future

Medium: Bulkding Meterials

Elipiosura Medium: Bullding Materials

Explosure Point: AOC 4 - ARC

Redeptor Population: Area Residents (Trespassers)

Redeptor Age: Youth (12-17 years)

Exposure	Chantical	Medum	Medium	Route	Route	EPC	Intake	Intake	Reference	Reference	Reference	Reference	Hezerd
Route	of Potential	EPC	EPC	EPC	EPC	Selected	(Non-Cander)	(Non-Cancer)	Dose (2)	Dose Units	Concentration	Concentration	Quotient
	Content	Value	Units	Value	Units	för Hezerd		Unite	ļ	\		Units	1
						Calculation (1)							ļ
estion		·	+	 		====t===== t · · ;	. *. r - <u> </u>	reaction executive a	tana mi tan				
	Aroclor-1254	30000	ug/kg	30000	ugfing	M	1.8E-008	mg/kg-day	2 0E-005	mg/kg-day	NA	N/A	9.0E-002
	2.3,7,8-TCDD equiv.	17	ugrkg	17	ug/kg	M	1.0E-009	mg/kg-day	-	.mg/kg-daty	N/A	N/A	
	Antimony	31700	mg/kg	31700	mg/kg	M	1.9E-003	mg/kg-day	4.0E-004	mg/kg-day	N/A	N/A	4 8E+000
	Arsenic	254	mg/kg	254	mgfkg	M	1 5E-006	mg/kg-day	3 0E-004	mg/kg-daty	NA	N/A	5.1E-002
	(Tol		1	1	ļ				ļ		ļ	ļ	4 9E+000
mal	1			*	† · · · · · · · · · · · · · · · · · · ·				•				1
	Arocler-1254	30000	uafka	30000	ugfkg	M	6.3E-008	mg/kg-day	2.0E-005	mafka-day	N/A	N/A	3 2E-001
	2,3,7,8-TCDD equiv.	17	ug/kg	17	ug/leg	M	7.7E-010	mg/kg-day		mg/kg-day	N/A	N/A	
	Artimony	31700	mafka	31700	mg/kg	l M	4.8E-004	mg/kg-day	4 0E-004	mg/kg-day	N/A	N/A	1.2E+000
	Arsenic	254	mafkq	254	mgfkg	M	1 1E-005	mg/kg-day	3 0E-004	marko-day	N/A	N/A	3.8E-002
	(Tol	-n			• •					1		1	1 5E+000

(1) Medium-Specific (M) or Route-Specific (R) EPC selected for hezard calculation.

(2) Chronic.

- - Reference Dose not available, therefore Hazard Quotient not calculated N/A - Not Applicable

TABLE 7.2.CT CALCULATION OF NON-CANCER HAZARDS CENTRAL TENDENCY EXPOSURE HORSESHOE ROAD COMPLEX SITE, SAYREVILLE, NEW JERSEY

Scaterio Timefrane: Current and Future Medium: Building Materials Exposure Medium: Building Materials

Exposure Point: AOC 4 - ARC

Receptor Population: Area Residente (Trespassers)

Į!	Receptor Population: Area Residente (Ti Receptor Age: Youth (12-17 years)	en parker in deriveran in een			general etc.					2 °	A CONTRACT THE PARTY OF THE PAR	<u>.</u>	
Esposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intalce (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hezerd Quotient
retion		THE PROPERTY OF THE PARTY OF TH	1	-,,	**********	} -	}		la serv	ļ · ·			1
- 1	Arodor-1254	6599	ugAg	5590	ug/kg	м	1.7E-007	mg/kg-day	2.0E-005	mg/kg-day	N/A	N/A	8.4E-003
:	2,3,7,8-TCDD equiv.	3.2	ug/kg	3.2	ugfig	M	9.6E-011	mg/kg-day	-	mg/kg-day	N/A	NYA	_
	Antimony	9017	mg/kg	9017	mgfig	M	2.7E-004	mg/kg-day	4.0E-004	mg/kg-day	N/A	N/A	6.8E-001
- 14	Areanic	155	mg/kg	155	mg/kg	M]	4.7E-008	mg/kg-day	3.0E-004	mg/kg-day	N/A	N/A	1.6E-002
	(Total)				-								7.06-001
	Aradar-1254	5590	upfes	5599	ugftg	M	1.2E-008	mg/kg-day	2.0E-005	mg/kg-day	N/A	N/A	5.9E-002
į:	2,3,7,8-TCDD equiv.	3.2	ugho	3.2	ugfig	M	1.4E-010	ing/kg-day	-	mg/kg-day	N/A	NA	_
- 14	Anthrony	9017	mg/kg	9017	mg/kg	м	1.4E-004	mg/kg-day	4.0E-004	mg/kg-day	N/A	N/A	3.4E-001
i i	Areenic (Total)	165	mg/kg	156	mg/kg	M	7.0E-008	mg/kg-day	3.0€-004	mg/kg-day	N/A	NA	2 3E-002 4 2E-001
i in in a real	na kanananan kananan kanan kanan kanan kanan kanan kanan kanan kanan kanan kanan kanan kanan kanan kanan kanan	la contra de la contra de la contra de la contra de la contra de la contra de la contra de la contra de la con	#		deservantes.	!	==	k .;	•	Total Hazard Indi	IX Across All Exposure	Routes/Pathways	1.1E+000

(1) Medium-Specific (M) or Route-Specific (R) EPC selected for heasted calculation.

(2) Chronic.

-- Reference Dose not available, therefore Hazard Quotient not oslouisted. N/A - Not Applicable.

TABLE 7.3 RME CALCULATION OF NON-CANCER HAZARDS REASONABLE MAXIMUM EXPOSURE HORSESHOE ROAD COMPLEX SITE, SAYREVILLE, NEW JERSEY

Scenario Timeframe: Current and Future

Medium Surface Water Exposuré Medium: Surface Water Exposure Point AOC 1 - HRDD

Receptor Population: Area Residents (Trespassers)

Receptor Age: Youth (12-17 years)

Exposure	Chemical	Medum	Medum	Route	Route	EPC	Iriahe	Intake	Reference	Reference	Reference	Reference	Hazard
Route	of Potential	EPC	EPC	EPC	EPC	Selected	(Non-Cancer)	(Non-Cancer)	Dose (2)	Dose Units	Concentration	Concentration	Quotient
	Concern	Value	Unite	Value	Units	for Heaterd		Units	1			Units	ì
			1			Calculation (1)							
pestion	Vinyl Chloride	0.004	mg/f	0.004	mg/l	₩ ₩	1.2E-007	ring/kg-day		mg/kg-day	A STATE OF THE STA	N/A	
	Antimony	0.01	mgit	0.01	mg/l	M	3.0E-007	rhg/kg-day	4.0E-004	mg/kg-day	NVA	N/A	7 5E-004
	Arsenic	0.0696	mgf	0.896	mg/l	M	2 7E-006	mg/kg-day	3.0E-004	mg/kg-day	N/A	N/A	9.0E-003
	Cadmium	0.0065	mgf	0.0065	mgf	M	2 8E-007	mg/kg-day	5.0E-004	mg/kg-day	N/A	N/A	5.1E-004
	Copper	1.23	mgf	1.23	mg/l	M	3.7E-005	ringfkg-day	4.0E-002	mg/kg-day	N/A	NA	9.2E-004
	Manganesa	1.03	mgA	1.03	mgf	M	3.1E-005	mg/kg-day	2.4E-002	mg/kg-day	N/A	N/A	1.3E-003
	Nickel	0.144	mgf	0.144	mg#	M	4.3E-006	mg/kg-day	7.0E-005	mg/kg-day	N/A	N/A	6.2E-002
	(Tot	= ()						1					7.4E-602
mel	Vinyl Chloride	0.004	mg/l	0.004	mgf	M	1.6E-006	mg/kg-day	-	mg/kg-day	NVA	N/A	
	Antimony	0.01	mg#	0.01	mgM	M	5.5E-009	mg/kg-day	4.0E-004	mg/kg-day	NYA	NYA	1.4E-005
	Arsenic	0.0896	mg/l	0.898	mg/l	M	4.9E-008	rhg/kg-day	3.0E-004	mg/kg-day	N/A	N/A	1 8E-004
	Cadmium	0.0085	mgfl	0.0085	mgf	M	4.7E-009	ring/kg-day	5.0E-004	mg/kg-day	N/A	N/A	9.4E-006
	Copper	1.23	mgf	1.23	mgf	M	8 BE-007	rhg/kg-day	4.0E-002	mg/kg-day	N/A	N/A	1 7E-005
	Manganasa	1.03	mg#	1.03	mgit	M N	5.7E-007	mg/kg-day	2.4E-002	mg/kg-day	N/A	N/A	2 4E-00
	Nickel	0.144	mgf	0.144	mgri	M	7.9E-009	mg/kg-day	7.0E-005	mg/kg-day	N/A	N/A	1 IE-004
	(Tat	- 0	1		i		'	J		1	1	1	3.4E-004

(1) Medium-Specific (M) or Route-Specific (R) EPC selected for heteric calculation.

(2) Chronic.

-- - Reference Dose not available, therefore Hazard Quotient not calculated. N/A - Not Applicable.

TABLE 7.3 RME CALCULATION OF NON-CANCER HAZARDS REASONABLE MAXIMUM EXPOSURE HORSESHOE ROAD COMPLEX SITE, SAVREVILLE, NEW JERSEY

Scenario Timetrane. Current and Future

Medium: Surface Water

Exposure Medium: Surface Water

Exposure Point: ADC 2 - ADC

Receptor Population: Area Residents (Trespassars)

Receptor Age: Youth (12-17 years)

Expesure	Chemical	Medium	Medium	Route	Route	EPC	Intake	Intake	Reference	Reference	Reference	Reference	Hezard
Route	of Potential	EPC	EPC	EPC	EPC	Selected	(Non-Cancer)	(Non-Cancer)	Dose (2)	Dose Units	Concentration	Concentration	Quotient
	Concern	Value	Units	Value	Unifs	for Heaserd		Units				Units	1
						Calculation (1)							
estion	Vinyi Chiorida	0.0000	mg/l	0.0098	mg/l	†*************************************	2 ÞE-007	mg/kg-day		mg/kg-day	N/A	N/A	T ===::
	Antimony	0.0096	mgfi	0.0096	mgf	NA I	2 9E-007	thighig-day	4.0E-004	mg/kg-day	N/A	N/A	7 2E-004
	Arsenic	0.467	mgf	0.467	mgfl	M	1.4E-005	mg/kg-day	3.0E-004	mg/kg-day	N/A	N/A	4.7E-002
	Manganese	0.673	mgf	0.673	mgf	M	2 0E-005	mg/kg-day	2 4E-002	mg/kg-day	N/A	N/A	8.4E-004
	Thellum	0.0023	mgf	0 0023	mgf	M	6.9E-008	mg/kg-day	7.0E-005	mg/kg-day	N/A	N/A	9 9E-004
	(Tota	ŋ∤		1				Ì					4 DE-002
mei	Vinyl Chloride	0 0008	mgf	0.0098	mgff	M	3.9E-008	rhg/kg-day		mg/kg-day	N/A	N/A	
	Antimony	0.0096	mgf	0.0096	mg#l	M	5.3E-009	rhg/kg-day	4.0E-004	mg/kg-day	N/A	N/A	1.3E-005
	Arsenic	0.467	mgf	0 467	mg/l	M	2 8E-007	rhg/kg-day	3.0E-004	mg/kg-day	N/A	N/A	8 6E-004
	Manganese	0.673	mgf	0.673	mgH	M	3.7E-007	ring/kg-day	2.4E-002	mg/kg-day	N/A	N/A	1 5E-005
	Thellum	0.0023	mgf	0.0023	mgf	M	1.3E-009	rhg/kg-dey	7.0E-005	mg/kg-day	N/A	N/A	1 åE-009
	(Tota	ام	_		1	1 1			1			Į.	9 0E-00-

(1) Medium-Specific (M) or Route-Specific (R) EPC selected for hezard calculation.

(2) Chronic

- - Reference Dose not evallable, therefore Hazard Quotient not calculated.

TABLE 7.3 RME CALCULATION OF NON-CANGER HAZARDS REASONABLE MAXIMUM EXPOSURE HORSESHOE RÓAD COMPLEX SITE, SAYREVILLE, NEW JERSEY

Scenario Timeframe. Current and Future

Medium: Surface Water

Explosure Medium: Surface Water

Exposure Point: AOC 3 - SPD

Reseptor Population: Area Residents (Trespessers)

Receptor Age: Youth (12-17 years)

Exposure	Chemical	Medium	Medium	Route	Route	EPC	Intekt	Iriake	Reference	Reference	Reference	Reference	Hezerd
Route	of Potential	EPC	EPC	EPC	EPC	Selected	(Non-Cancer)	(Non-Cancer)	Dose (2)	Dose Units	Concentration	Concentration	Quotien
	Concern	Value	Units	Value	Units	for Hazard		Unite		ŀ		Unite	
						Calculation (1)						İ	
gestion .	Methoxychlor	0.0004	mg/ -	0.00091	mg/l	M	2 7E-008	mg/kg-day	5 0€-003	mg/kg-day	NVA	N/A	5.5E-006
	Aluminum	2.61	mgrl	2.61	mg4	M	7 8E-005	mg/kg-day	1.0E+000	mg/kg-day	N/A	N/A	7.8E-005
	Arsenic	0.0099	mg/l	0.0099	mg/f	M	3 0E-007	mg/kg-day	3 0E-004	mg/kg-day	N/A	N/A	9 9E-004
	Copper	0.247	mgf	0.247	mgf	M	7 4E-006	mg/kg-day	4.0E-002	mg/kg-day	N/A	N/A	1.9E-004
	Manganese	0.919	mgf	0.919	mgfl	M	2 8E-005	mg/kg-day	2 4E-002	mg/kg-day	NA	N/A	1.1E-003
	Vanadium	0 0074	mg/l	0 0074	mg/l	M	2.2E-007	mg/kg-day	7.0E-003	mg/kg-day	NVA	N/A	3.2E-005
	(Tot				•		ŀ						2 4E-003
rmel .	Methorychlor	0 00091	mgf	0.00091	mg/l	M	8 5E-009	mg/kg-day	5.0E-003	mg/kg-day	NA	N/A	1.7E-006
	Aluminum	2.81	mgf	2.61	mg/l	M	1 4E-008	mg/kg-day	1.0E+000	mg/kg-day	N/A	N/A	1.4E-006
	Arsenic	0.0099	mg/t	0.0099	mgfl	M	5 4E-009	mg/kg-day	3 0E-004	mg/kg-day	NA	N/A	1 8E-005
	Copper	0 247	mgf	0.247	mgf	М	1.4E-007	mgfkg-day	4.0E-002	mg/kg-day	N/A	N/A	3 4E-006
	Manganese	0.919	mg/l	0.919	mg#	M	5.1E-007	mg/kg-day	2 4E-002	mg/kg-day	NA	N/A	2 1E-005
	Venedum	0.0074	mgfl	0.0074	mg/l	M	4.1E-009	mg/kg-day	7.0E-003	mg/kg-day	NA	N/A	5.8E-007
	(Tot	- 6				İ	li .				1		4 8E-005

⁽¹⁾ Medium-Specific (M) or Route-Specific (R) EPC selected for hazard autoutation.

(2) Chronic

⁻⁻ Reference Dose not available, therefore Hazard Quotient not calculated.

TABLE 7.3 RME CALCULATION OF NON-CANCER HAZARDS REASONABLE MAXIMUM EXPOSURE HORSESHOE ROAD COMPLEX SITE, SAYREVILLE, NEW JERSEY

Scenario Timeltame: Current and Future

Medium: Surface Water

Exposure Medium: Surface Water

Exposure Point: AOC 4 - ARC

Receptor Population: Area Residents (Trespessers)

Exposure	Chemical	Medium	Medium	Route	Route	EPC	Intake	Intake	Reference	Reference	Reference	Reference	Heard
Route	of Potential	EPC	EPC	EPC	EPC	Selected	(Non-Cancer)	(Non-Cancer)	Dose (2)	Dose Units	Concentration	Concentration	Quotient
	Concern	Value	Units	Value	Units	for Hezerd Calculation (1)		Units				Units	
etion	Aritmony	0.002	mgA	0.092	mgl	 	7 8E-008	mg/kg-day	4 0E-004	mg/kg-day	NVA	NVA	6 9E-003
1	Arsenic	0.013	mg/l	0.013	mgA	M	3.9€-007	mg/kg-day	3.0E-004	mg/kg-day	N/A	N/A	1 3E-003
	Cadnium	0.0005	mgf	0.0065	mgA	M	2 6E-007	mg/kg-day	5.0E-004	mg/kg-day	N/A	N/A	5 1E-004
	Copper	1 23	mgf	1.23	mgf	M .	3.7E-005	mg/kg-day	4.0E-002	mg/kg-day	N/A	N/A	9 2E-004
	Manganese	0.73	mg#	0.73	mgf	M	2.2E-005	mgfkg-day	2 4E-002	mg/kg-day	N/A	N/A	9.1E-004
1	Nickel	0.128	mgA	0.126	mgA	M .	3.8E-006	mg/kg-day	2.0E-002	mgfkg-day	N/A	N/A	1.9E-004
	Silver	0.038	mgf	0.038	mg/l	M	1.1E-008	mg/kg-dary	5 0E-003	mg/kg-day	N/A	N/A	2 3E-004
	(10	tel)	<u> </u>	<u> </u>		_l					L		1.1E-00
mel	Antimony	0.092	mgf	0.092	mg/t	M	5.1E-008	mgftg-day	4.0E-004	mg/kg-day	N/A	N/A	1.3E-004
ļ	Arsenic	0.013	Rgft	0.013	mgf	M	7.2E-009	mg/kg-day	3.0E-004	mg/kg-day	N/A	N/A	2.4E-005
	Cadmium	0.0086	mgri	0.0085	ngf	M	4 7E-009	mg/kg-day	5.0E-004	mg/kg-day	N/A	N/A	9.4E-006
	Соррег	1.23	mgf	1.23	mgf	M	6.8E-007	mg/kg-day	4.0E-002	mg/kg-day	N/A	N/A	1 7E-005
	Manganese	0.73	mg/l	0.73	mgf	M	4.0E-007	mg/kg-day	2.4E-002	mg/kg-day	N/A	N/A	1 7E-00
(Nichel	0 128	mgA	0 128	mgf	(M	7,0E-009	mg/kg-dwy	2.0E-002	mg/kg-day	N/A	N/A	3 5E-00
	Silver	0.036	mg/l	0.038	mgfl	M	1 3E-008	mg/kg-day	5 0E-003	mg/kg-day	N/A	N/A	2 5€-00€

(1) Medium-Specific (M) or Route-Specific (R) EPC selected for hazard asiculation.

(2) Chronic.

-- Reference Dose not available, therefore Hazard Quotient not calculated. N/A - Not Applicable

TABLE 7.3 RME CALCULATION OF NON-CANCER HAZARDS REASONABLE MAXIMUM EXPOSURE HORSESHOE ROAD COMPLEX SITE, SAYREVILLE, NEW JERSEY

Scenario TimeFame Current and Future
Medium Surface Water
Exposure Medium Surface Water
Exposure Point: AOC 5 - DSM
Receptor Population: Area Residents (Trespassiers)
Receptor Age - Youth (12-17 years)

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	intake (Non-Cencer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotent
Ingestion	Arsaric	0.589	mgil	0 569	mol		1 7E-005	mg/kg-day	3.0E-004	mg/kg-dey	N/Ā	N/A	5 7E-002
	Manganese (Total)	1.19	mg/l	1 19	mg/l	M	3.6E-005	mg/kg-dey	2.4E-002	mg/kg-day	N/A	N/A	1 5E-003 5 8E-002
Dermal	Arseric	0.569	mg/l	0 569	mg/l	M	3 1E-007	mg/kg-day	3 0E-004	mg/kg-day	N/Ā	N/A	1 0E-003
	Manganese	1.19	mg#	1 19	mg/l	M	6 5E-007	mg/kg-day	2.4E-002	mg/kg-dey	N/A	N/A	2 7E-005
L	(Total)		l				1		l	1			1 1E-003
Promote a second	r i irra ri orani minatatatani.					• • • • • • • • • • • • • • • • • • • •	Tan to the control of	-,		Total Hazard Index	x Across All Exposure	Routes/Pathways	5 9E 002

(1) Medium-Specific (M) or Route-Specific (R) EPC selected for hezerd calculation.

(2) Chronic.

··· Reference Dose not available, therefore Hazard Quotient not calculated.

TABLE 7 3 RME

TABLE 7.3 RME CALCULATION OF NON-CANCER HAZARDS REASONABLÉ MAXIMUM EXPOSURE HORSESHOE ROAD COMPLEX SITE, BAYREVILLE, NEW JERSEY

Scenario Timeframe Current and Future
Medium: Surface Water
Exposure Medium: Surface Water
Exposure Point: AÖC 6 - RR
Receptor Population: Area Residents (Trespessers)
Receptor Age: Youth (12-17 years)

Exposure	Chemical	Medum	Medium	Roule	Route	EPC	intake	Intake	Reference	Reference	Reference	Reference	Hazard
Route	of Potential	EPC	EPC	EPC	EPC	Selected	(Non-Cancer)	(Non-Cancer)	Dose (2)	Dose Units	Concentration	Concentration	Quotient
	Cohcern	Value	Units	Value	Units	for Hazard Calculation (1)		Units	11	ļ		Units	
gestion	Aluminum	2.31	mg/l	2 31	mg/l	M	6 9E-005	mg/kg-day	1 0E+000	mg/kg-day	N/A	NEA .	6 9E-005
	Antimony	0 0057	mgf	0 0057	Pgm	M	1.7E-007	mg/kg-day	4 0E-004	mg/kg-tasy	N/A	N/A	4 3E-004
	Arsenic	0 02	mgrl	0.02	mgA	M	6 0E-007	mg/kg-day	3.0E-004	mg/kg-day	N/A	N/A	2.0E-003
	Copper	0.249	mgf	0 249	mg/l	M	7.5E-006	mg/kg-day	4.0E-002	mg/kg-day	N/A	N/A	1 9E-004
	Manganese	0.101	mgf	0 101	mgri	M	3 0E-006	mg/kg-day	2.4E-002	mg/kg-day	N/A	N/A	1.3E-00
	Thallum	0.005	mgf	0 005	mgf	M	1 5E-007	mg/kg-day	7 0E-005	mg/kg-day	N/A	N/A	2 1E-00
	Vanadum	0.0186	mgf	0.0186	mg/l	M	5 6E-007	mg/kg-day	7.0E-003	mg/kg-day	N/A	N/A	8 0E-00
	(Tota		ļ		ļ					[5 0E-00
maf	Aluminum	231	mgrl	231	mg/l	, W.	1.3E-008	mg/kg-day	1 0E+000	mg/kg-day	N/A	NVA	1 3E-00
	Antimony	0.0057	mg/l	0.0057	mg/l	M	3 1E-009	mg/kg-day	4.0E-004	mg/kg-they	N/A	NVA	7 8E-00
	Arsenic	0.02	mg/l	0.02	mg/l	M	1 1E-008	mg/kg-day	3.0E-004	mg/kg-day	N/A	N/A	3.7E-00
	Copper	0.249	mg/l	0.249	mg/l	M	1.4E-007	mg/kg-day	4.0E-002	mg/kg-day	N/A	N/A	3 4E-00
	Mangenese	0.101	mgfl	0 101	mg/l	M	5 6E-006	mg/kg-day	2.4E-002	mg/kg-day	N/A	N/A	2 3E-00
	Thelium	0.005	mgf	0.005	mgf	M	2.8E-009	mg/kg-day	7.0E-005	mg/kg-day	N/A	N/A	3 9E-00
	Vanadum	0.0186	mgfi	0.0186	mg/\	M	1.0E-008	mg/kty-day	7.0E-003	mg/kg-day	NA	N/A	1 5E-00
	(Tota	ıb İ	1		1	1		1			[9 2E-00

(1) Medum-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

(2) Chronic.

--- Reference Dose not available, therefore Hazard Quotient not calculated. N/A - Not Applicable.

TABLE 7 4 RME CALCULATION OF MON-CANCER HAZARDS REASONABLE MAXIMUM EXPOSUME HORSESHOE ROAD COMPLEX SITE, SAYREVILLE, NEW JERSEY

Scenario Timetrame Current and Future	:	 -		
Medium: Surface Water				
Exposure Medium: Shellish				
Exposure Point: AOC 5 - DSM				
Receptor Population: Residents				
Receptor Age: Adult			.	

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Condentration	Reference Conicentration Units	Hazard Quotient
ingestion	Arsenic	0.560	mgA	7 5	mg/kg	Ā	2.2E-009	mg/kg-day	3 0E-004	mg/kg-duy	NYA	NVA	7 4E-006
	Mangenese	1 19	mg/l	714	mg/kg	R	6.4E-008	mg/kg-day	2.4E-002	mg/kg-day	N/A	NA	2 6E-006
	(Total)		L	l "	J		[l			1 0E-005
		The second of th									x Across All Exposure	Routes/Pathways	1.0E-005

(1) Medium-Specific (M) or Route-Specific (R) EPC selected for hezard calculation.

(2) Chronic.

 \cdots - Reference Dose not available, therefore Hazard Quotient not calculated. N/A - Not Applicable.

TABLE 7.4 RME CALCULATION OF NON-CANCER HAZARDS REABONABLE MAXIMUM EXPOSURE HORSESHOE ROAD COMPLEX SITE. SAVREVILLE, NEW JERSEY

Scenario Timehame Curant and Future
Medium Surface Water
Exposure Medium Shaffish
Exposure Point AOC 6 - RR
Receptor Population: Residants
Receptor Age: Adult

	profesional and extensive despite the entire	· · · · · · · · · · · · · · · · · · ·		1 1	1227	1 7 1 2 7 7 1	i	T	1	į .	ranama mati		
Exposure	Chémical	Medium	Medium	Route	Route	EPC	Intake	Intake	Reference	Reference	Reference	Reference	Hazard
Route	of Potential	EPC	EPC	EPC	EPC	Selected	(Non-Cancer)	(Non-Gancer)	Dose (2)	Dose Units	Concentration	Concentration	Quotient
	Concern	Value	Units	Value	Units	for Hazerd		Units			ļ	Units	
	i					Calculation (1)			Ì	1			
Ingestion	Aluminum	2.31	mgf	••	mg/kg	Ā) :- 	mg/kb-day	1.0E4000	mg/kg-day	NZA	NA	h
	Antimony	0.0057	mg#	0.0057	mgfkg	R	5 1E-013	mg/kg-day	4.0E-004	mg/kg-day	N/A	N/A	1.3E-009
	Arsenic	0.02	mg/l	0.88	mgfkg	R	7 8E-011	mg/kig-day	3.0E-004	mg/kg-day	N/A	N/A	2 6E-007
	Copper	0 249	mgf	49 8	mg/kg	R	4.4E-009	mg/kg-dey	4.0E-002	mg/kg-day	N/A	N/A	1 1E-007
	Manganese	0 101	mgf	60.6	mg/kg	R	5 4E-009	mg/kg-day	2 4E-002	mg/kg-day	NVA	N/A	2 2E-007
	Thallium	0.005	mg#	0.17	mg/kg	R	1 5E-011	mg/kg-day	7 0E-005	mg/kg-day	N/A	N/A	2 2E-007
	Vanadum	0.0186	mg/l	-	mg/kg	R	-	mg/kg-day	7 0E-003	mg/kg-day	N/A	NA	
[<u>.</u>	(Total)			l		l		l	1., ,	1			8 1E-007
1					-1					Total Hazard Inde	x Across All Exposure	Routes/Pathways	8 1E-007

(1) Medium-Specific (M) or Route-Specific (R) EPC selected for heaterd calculation

(2) Chronic

 \sim - Reference Dose not available, therefore Hazard Quotient not calculated.

TABLE 7 5 RME CALCULATION OF NON-CANCER HAZARDS REASONABLE MAXIMUM EXPOSURE HORSESHOE ROAD COMPLEX SITE, SAYREVILLE, NEW JERSEY

Scenario Timeframe: Current and Fullure Medium: Sediment

Exposure Medium: Sediment

Expolure Point AOC 1 - HRDD

Receptor Population: Area Residents (Trespessers)

Receptor Age: Youth (12-17 years)

Exposure	Chemical	Medium	Medium	Route	Route	EPC	Irlalia	Inteke	Reference	Réference	Reference	Reference	Hezerd
Route	of Potential	EPC	EPC	EPC	EPC	Selected	(Non-Cahcer)	(Non-Cencer)	Dote (2)	Dose Units	Concentration	Concentration	Quotient
	Céncem	Velue	Urits	Value	Units	for Hazerd		Uhits				Urits	
			1			Calculation (1)	1						
gestion	Antimony	214	mg/kg	21.4	mg/kg	- w	2 6E-908	mg/kg-day	4 0E-004	mg/kg-dey	N/A	N/A	6 4E-003
	Arseric	1110	mg/kgl	1110	mg/kg	M	1.3E-004	mg/Rg-day	3.0£-004	mg/kg-day	N/A	N/A	4 4E-001
	Coppler	5300	mg/kgl	5300	mg/kg	M	6.4E-004	mg/kg-day	4.0E-002	mg/kg-day	N/A	N/A	1 6E-002
	Manganese	2080	mg/kg	2080	mg/kg	M	2.5E-004	mg/lig-day	2.46-002	mg/kg-day	N/A	N/A	1 0E-002
	Theliten	3.3	mg/kg	3 3	mg/kg	M	4.0E-d07	mg/kg-dey	7.08-005	mg/kg-dey	N/A	N/A	5.7E-003
	(Total)					1							4 8E-001
finel	Artirhony	21.4	mg/kg	21 4	mg/kg	M	2 4E-007	mg/kg-day	4.0€-004	mg/kg-day	N/A	N/A	5 9E-004
	Arsetic	1110	mg/kg	1110	mgAkg	M	3.7E-005	mg/kg-day	3.0E-004	mg/kg-day	N/A	N/A	1.2E-001
	Coppler	5300	mg/kg	5300	mg/kg	M	5.8E-005	mg/kg-day	4.0£-002	mg/kg-day	N/A	N/A	1 5E-003
	Mandanese	2080	mg/kg	2080	mg/kg	M	2.3E-005	mg/kg-dey	2.4E-002	mg/kg-day	N/A	N/A	9 5E-004
	TheffLm	3.3	mg/kg	3 3	mg/kg	M	3 6E-008	mg/kg-day	7.0E-005	mg/kg-day	N/A	N/A	5 2E-004
	(Total)		'			l i				'''			1 3E-001

(1) Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation

(2) Chronic.

--- Reference Dose not available, therefore Hazard Quotient not calculated. N/A - Not Applicable

TABLE 7.5 RME CALCULATION OF NON-CANCER HAZARDS REASONABLE MAXIMUM EXPOSURE HORSESHOE ROAD COMPLEX SITE, SAYREVILLE, NEW JERSEY

Scenario Timelrame: Curreit and Future
Medium: Sediment
Exposure Medium: Sediment
Exposure Point: AOC 2 - ADC
Receptor Population: Area Residente (Trespessars)
Receptor Age: Youth (12-17 years)

Exposure	Chemical	Medum	Medium	Route	Route	EPC	irtake	Intake	Reference	Reference	Reference	Reference	H#zard
Route	of Potential	EPC	EPC	EPC	EPC	Selected	(Non-Cancer)	(Nbn-Cancer)	Dose (2)	Doke Units	Condentration	Concentration	Quotient
	Concern	Value	Units	Value	Units	for Heamrd		Units				Units	
			1			Calculation (1)				•			
gestion	Benzo(a)pyrene	6002	ug/kg	6002	ugfig	7	7.2E-007	mg/kg-day		mg/kg-day	N/A	NVA	
	Methotychlor	640000	ugfkg	640000	ughg	M	7.7E-005	rhg/kg-day	5.0E-003	mg/kg-day	NYA	NIA	1.5E-002
	Arsenic	3480	mgAcg	3480	mg/kg	M	4.2E-004	mg/kg-day	3 0E-004	mg/kg-day	N/A	N/A	1 4E+006
	(Total)				ļ								1.4E+000
ermel	Benzo(a)pyrene	6002	ugfig	6002	ug/kg	M	8.6E-007	rhg/kg-dely		mg/kg-day	NVA		
	Methoxychior	640000	ug/kg	640000	ug/kg	M	7.0E-005	mg/kg-day	5.0E-003	mg/kg-day	N/A	N/A	1 4E-002
	Arsenic	3480	mgfkg	3480	mg/kg	M	1.1E-004	rhg/kg-day	3.0E-004	mg/kg-day	N/A	N/A	3 8E-001
	(Total)		ì	1	ì)		Ì	\		}	1	4 0È-001

- (1) Medium-Specific (M) or Route-Specific (R) EPC selected for heaterd calculation.
- (2) Chronic.
- -- Reference Dose not available, therefore Hazard Quotient not calculated.
- N/A Not Applicable.

TABLE 7.5.CT CALCULATION OF NON-CANCER HAZARDS CENTRAL TENDENCY EXPOSURE HORSESHOE ROAD COMPLEX SITE, SAYREVILLE, NEW JERSEY

Scenario Timellame: Current and Future

Medium: Sedment

Exposure Medum: Sedment

Exposure Point: AOC 2 - ADC

Receptor Propulation: Area Residents (Trespessors) Receptor Age: Youth (12-17 years)

Exposure	Charrical	Medum	Medum	Raute	Route	EPC	irtake	trtaice	Reference	Reference	Reference	Reference	Hezerd
Route	of Potential	EPC	EPC	EPC	EPC	Selected	(Non-Cancer)	(Non-Cancer)	Dose (2)	Dose Units	Concentration	Concentration	Quotient
	Concern	Value	Uritts	Value	Urits	for Hezerd		Urits				Urits	
						Calculation (1)							
rgestan	Benzo(a)pyrane	398	ugleg	395	uoka	<u></u>	4.7E-008	mg/kg-day	 === <u>-</u> -	mg/kg-dey	N/A	N/A	<u>-</u>
_	Methoxychior	56556	up/eg	56556	ug/kg	M	6.8E-006	mg/kg-day	5.0E-003	mg/kg-day	N/A	N/A	1.4E-003
	Arseric	669	mg/kg	669	mg/kg	м	8.0E-005	mg/kg-day	3.0E-004	mg/kg-day	NA	N/A	2.7E-001
	(Total)				-								2.7E-001
Jermal	Benzo(e)pyrene	395	ug/kg	395	ug/kg	M	5.6E-008	mg/kg-day		mg/kg-day	N/A	N/A	
	Methoxydrior	56556	uplep	56556	ugfig	M	6.2E-006	mg/kg-day	5.0E-003	mg/kg-day	NA	N/A	1.2E-003
	Arseric	666	mg/kg	889	mg/kg	M	2.2E-005	mg/kg-day	3.0E-004	mg/kg-day	N/A	N/A	7.4E-002
1	(Total)		1					· ·		[r Across All Exposure		7.5E-002

(1) Medium-Specific (M) or Roule-Specific (R) EPC selected for hezerol calculation.

(2) Civoric.

-- Reference Dose not available, therefore Hazard Quotient not calculated.

TABLE 7.5.RME CALCULATION OF NON-CANCER HAZARDS REASONABLE MAXIMUM EXPOSURE HORSESHOE ROAD COMPLEX SITE, SAYREVILLE, NEW JERSEY

Scenario Timetrame: Current and Future Exposure Medium: Sedment Exposure Point: AOC 3 - SPD

Receptor Population: Area Residents (Treepassers) Receptor Age: Youth (12-17 years)

Exposure	Chemical	Medium	Medium	Route	Route	EPC	intake	Intake	Reference	Reference	Reference	Reference	1
Route	of Potential	EPC	EPC	EPC	EPC	Selected	(Non-Cancer)	(Non-Canour)	Dose (2)	Dose Units			Heam
	Concern	Velue	Units	Value	Unite	for Heamed	(************************************	Units	2000 (2)	COST CANA	Concentration	Concentration	Quotie
						Calculation (1)		1		1		Unite	
etion	2 00 1 00 00 00 00 00 00 00 00 00 00 00 0		ļ			ļ ļ				1			
	Benso(b)fluoranthene	910	ugfig	910	upfup		1.1E-007	mg/kg-day	_	mafka-day	N/A	N/A	ĺ
	Benac(s)pyrene	630	ugfig	630	ugfig	м	7.6E-008	mg/kg-day	_		N/A		-
	Olbenzo(s,h)enthracene	130	ugfig	130	upfup	M	1.6E-008	mg/kg-day	_	mg/kg-day	NVA	N/A	-
	Arochlor 1254	68	ugfig	68	uafta	w	8.2E-009	mg/kg-day	2.0E-005	mg/kg-day	N/A	N/A	-
	Heptachlor	220	ug/kg	220	uafka	M	2.6E-008	mg/kg-day	5.0E-004	mg/kg-day		N/A	4.1E-0
	Methoxychlor	130000	ugfig	130000	uafta	M	1.6E-005	mg/kg-day	5.0E-003	mg/kg-day	N/A N/A	. NA	5.3E-0
	Aluminum	13600	mg/kg	13800	mañta	<u> </u>	1.6E-006	mg/kg-day	1.0E+000	mg/kg-day	N/A	NA	3.16-0
	Antimony	2.3	maka	2.3	mafea	l mi	2.8E-007	mg/kg-day	1.0E+000 4.0E-004	mg/kg-day	N/A	NA	1.6E-0
	Areanic	21.8	mafta	21.8	mafte	M	2.6E-008	mg/kg-day	3.0E-004	mg/kg-day	N/A	N/A	0.9E-0
	Copper	818	mg/kg	818	mg/kg	M M	9.8E-005	mg/kg-day	4.0E-002	mg/kg-day	N/A	NA	8.7E-0
	Manganess	262	mg/kg	282	mg/kg	l m	3.4E-005	mg/kg-day	2.4E-002	mg/kg-day	N/A	N/A	2.4E-0
	Venedum	47.0	mgfkg	47.9	mgAqq	M	5.7E-008	mg/kg-day	7.0E-003	mg/kg-day	N/A	N/A	1 4E-0
_	(Total)						0.72 000		7.0E-003	mg/kg-day	NA	N/A	8.2E-0
	I			† ·	* 1								1.8E-0
	Beran(b) Augrenthene	910	ugita	910	ug/kg	M	1.3E-007	mg/kg-day	_		N/A	***	
	Benac(a)pyrene	630	ugfig	630	ug/kg	M	9.0E-008	mg/kg-day	-	mg/kg-day mg/kg-day	N/A	N/A N/A	-
	Dibenso(s,h)enthrecene	130	ugfig	130	ug/kg	M	1.9E-006	mg/kg-day	_	mg/kg-day	N/A		-
	Arochlor 1254	68	ugftg	68	ugfkg	M	1.0E-006	mg/kg-day	2.0E-005		N/A	N/A	-
	Haptachlor	220	ugftg	220	ugfig	M I	2.4E-008	mg/kg-day	5.0E-004	mgRg-day mgRg-day	N/A	N/A	5.2E-0
	Mathoxychlor	130000	ugfig	130000	upfiq	m l	1.4E-005	mg/kg-day	5.0E-003	monto-day	N/A	N/A	4.8E-0
	Akerinum	13600	mgfleg	13600	mg/kg	M I	1.5E-004	marke-day	1.0E+000	monto-cary morto-cary	N/A	N/A N/A	2.9E-0
	Antimony	2.3	mg/teg	2.3	marka	M	2.5E-006	mg/kg-day	4.0E-004	mong-cay mong-day	N/A	N/A	1.5E-0
	Arsenic	21.8	mafkg	21.8	marka	M	7.2E-007	mg/kg-day	3.0E-004	mong-cary moftig-day	N/A	N/A	6.3E-0
	Copper	816	mg/kg	816	mafka	M	9.0E-006	mg/kg-day	4.0E-002	mgmg-casy mgftg-day	N/A	N/A	2.4E-0
	Manganese	202	mgftg	282	mafea	м	3.1E-008	marke-day	2.4E-002	marke-day	N/A	1	2.2E-0
	Venedum	47.0	mg/kg	47.9	mg/kg		5.3E-007	mg/kg-day	7.0E-003		NA I	N/A	1.3E-0
	(Total)		· ·			,	5.52 907	y	7.0C-003	Ingfitg-day	14A	N/A	7.5E-0 6.5E-0

⁽¹⁾ Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

⁽²⁾ Chronic.

⁻⁻ Reference Dose not available, therefore Hazard Quotient not calculated. N/A - Not Applicable.

TABLE 7.5 RME CALCULATION OF NON-CANCER HAZARDS REASONABLE MAXIMUM EXPOSURE HORSESHOE ROAD COMPLEX SITE. SAYREVILLE. NEW JERSEY

Scenario Timetrame Current and Future

Medium: Sedment

Exposure Medium: Sediment

Exposure Point AOC 4 - ARC

Receptor Population. Area Residents (Trespassers)

Receptor Age: Youth (12-17 years)

Exposure	Chemical	Medium	Medkim	Route	Route	EPC	Intake	intake	Reference	Reference	Reference	Reference	Hazard
Route	of Potential	EPC	EPC	EPC	EPC	Selected	(Non-Cancer)	(Non-Cancer)	Dose (2)	Dose Units	Concentration	Concentration	Quotient
	Concern	Value	Units	Value	Units	for Hazard	ļ	Units				Units	
						Calculation (1)						1	
estion	Benzo(a)pyrene	1000	ug/kg	1000	ug/kg	M	1.2E-007	mg/kg-day	• • • • • • • • • • • • • • • • • • • •	mg/kg-day	NA NA		
	Dieldrin	41	ug/kg	41	ugfkg	M]	4 9E-009	mg/kg-day	5 0E-005	mg/kg-day	N/A	N/A	9 85-005
	Aroclor-1248	2100	ug/kg	2100	ug/kg	M	2 5E-007	mg/kg-day	_	mg/kg-day	N/A	N/A	-
	Aroclor-1254	57500	ugfkg	57500	ug/kg	M	6 9E-006	mg/kg-day	2.0E-005	mg/kg-day	N/A	N/A	3 5E-001
	Arocior-1260	2100	ugfkg	2100	ug/kg	M	2.5E-007	mg/kg-day	-	mg/kg-day	NA	N/A	\ -
	2.3.7.8-TCDD equiv	0.08	ughig	0.06	ug/kg	M	9.6E-012	mg/kg-day	-	mg/kg-day	N/A	N/A	-
	Antimony	26	mg/ktg	26	mg/kg	M	3 1E-008	mg/kg-day	4.0E-004	mg/kg-day	N/A	N/A	7 8E-003
	Arsenic	49	mg/kg	49	mg/kg	M	5 9E-008	mg/kg-day	3.0E-004	mg/kg-day	N/A	N/A	2 OE-00:
	Copper	1493	mg/kg	1493	mg/kg	M	1.8E-004	mg/kg-day	4 0E-002	mg/kg-day	N/A	N/A	4.5E-003
	Silver	321	mg/kg	321	mg/kg	M	3.9E-005	mg/kg-day	5.0E-003	mg/kg-day	N/A	N/A	7.7E-00:
	(To	tal)	Į.	ļ		(ļ		ļ	!	ļ	3 8E-60
rmal	Benzo(a)pyrene	1000	ugfkg	1000	ug/kg	М	1 4E-007	mg/kg-day		mg/kg-day	NVA	··· NVĀ	- 1
	Dieldrin	41	ugfkg	41	ug/kg	M	4 5E-009	mg/kg-day	5.0E-005	mg/kg-day	N/A	N/A	9 0E-00
	Aroclor-1248	2100	ugfkg	2100	ugfkg	M	3 2E-007	mg/kg-day		mg/kg-day	N/A	N/A	
	Araclor-1254	57500	ug/kg	57500	ug/kg	M	8 9E-008	mg/kg-day	2.0E-005	mg/kg-day	N/A	N/A	4 4E-00
	Aroclor-1260	2100	ug/kg	2100	ug/kg	M	3 2E-007	mg/kg-day	-	mg/kg-day	N/A	N/A	-
	2,3,7,8-TCDD equiv	0.08	ug/kg	0.08	ug/kg	M	2 6E-012	mg/kg-day	-	mg/kg-day	N/A	N/A	-
	Antimony	26	mg/kg	26	mg/kg	м	2.9E-007	mg/kg-day	4 0E-004	mg/kg-day	N/A	NA	7.2E-00-
	Arsenic	49	mg/kg	49	mg/kg	M	1.6E-006	mg/kg-day	3 0E-004	mg/kg-day	N/A	N/A	5 4E-00
	Copper	1493	mg/kg	1493	mg/kg	м	1 6E-005	mg/kg-day	4.0E-002	mg/kg-day	NYA	NA	4 1E-00
	Silver	321	mg/kg	321	mg/kg	м	3 5E-008	mg/kg-day	5.0E-003	mg/kg-day	NA	N/A	7 1E-00
	(To	tal)			ŀ		I	1			1		4 5E-00

(1) Medium-Specific (M) or Route-Specific (R) EPC selected for hezard calculation.

(2) Chronic.

--- Reference Dose not available, therefore Hazard Quotient not calculated.

TABLE 7.5.RME CALCULATION OF NON-CANCER HAZARDS REABONABLE MAXIMUM EXPOSURE HORSESHOE ROAD COMPLEX SITE, SAYREVILLE, NEW JERSEY

Scenario Timeframe: Current and Future

Medium: Sediment

Exposure Medium: Sediment

Exposure Point AOC 5 - DSM

Receptor Population: Area Residents (Trespassers)

Receptor Age: Youth (12-17 years)

Exposure	Chemical	Medium	Medium	Route	Route	EPC	Irtake	irtake	Reference	Reference	Reference	Reference	Hazard
Route	of Potential	EPC	EPC	EPC	EPC	Selected	(Non-Carnoer)	(Non-Cancer)	Dose (2)	Dose Units	Concentration	Concentration	Quotest
	Concern	Value	Units	Value	Units	for Hezerd		Urits		1		Urite	
			1			Calculation (1)		1					
gestion	Bergo(e)erêrecere	300	ug/kg	300	upling	† u -	3 6E-006	mg/kg-day		mg/kg-day	N/A	N/A	
	Benzo(b)fluoranthene	730	ug/kg	730	ugAtg	M	8.8E-006	mg/kg-dey	-	mg/kg-day	N/A	N/A	-
	Benzó(e)pyrene	300	ugAcg	300	ug/kg	M	3.6E-008	mg/kg-dey .	-	ing/kg-day	N/A	N/A	-
	Indeno(1,2,3-cd)pyrene	220	ugArg	220	ug/kg	M	2.6E-006	mg/kg-day	-	mg/kg-day	N/A	N/A	_
	Arodor-1254	470	ug/kg	470	ug/kg	M	5.6E-006	mg/kg-dey	2.0E-005	mg/kg-day	N/A	N/A	2 8E-003
	Arseric	4030	mgArg	4030	mgArg	N N	4.8E-004	mg/kg-day	3.0E-004	mg/kg-day	N/A	N/A	1 6E+000
] (1	otal)		1	İ					1			1 6E+00
ermel	Bengo(s)enthracens	300	ug/kg	300	UgArg	M	4 3E-008	mg/kg-day		mg/kg-day	N/A	N/A	
	Bengo(b)fluoranthene	730	ug/kg	730	ug/kg	M	1 0E-007	mg/kg-day	-	mg/kg-day	N/A	N/A	-
	Bengo(#)pyrene	300	ug/kg	300	ug/kg	M	4.3E-008	mg/kg-day	_	mg/kg-day	N/A	N/A	-
	Indeno(1,2,3-cd)pyrene	220	ugAcg	220	upkg	M	3.1E-008	mg/kg-day	-	mg/kg-day	N/A	N/A	1 -
	Arodor-1254	470	ugArg	470	ug/kg	M	7.2E-008	mg/kg-day	2.0E-005	mg/kg-day	N/A	N/A	3.6E-003
	Arseric	4030	mg/kg	4030	ug/kg	M	1.3E-004	mg/kg-dey	3.0E-004	mg/kg-day	N/A	N/A	4.4E-00
	(Т	otal)		1	l			l	l		ļ	ļ	4 5E-001

(1) Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

(2) Circric

 \dots - Reference Dose not available, therefore Hazard Quotient not calcutated N/A - Not Applicable.

TABLE 7.5.CT CALCULATION OF NON-CANCER HAZARDS CENTRAL TENDENCY EXPOSURE HORSESHOE ROAD COMPLEX SITE, SAYREVILLE, NEW JERSEY

Scenario Timeliame: Current and Pulure

Medium: Sediment

Exposure Medium: Sediment

Exposure Point: AOC 5 - DSM

Receptor Population: Area Residents (Trespassers)

Receptor Age: Youth (12-17 years)

Exposure	Chemical	Medum	Medum	Route	Route	EPC	irtalco	irtaice	Reference	Reference	Reference	Reference	Hezerd
Roule	of Potential	EPC	EPC	EPC	EPC	Selected	(Non-Cencer)	(Non-Cancer)	Dose (2)	Dose Urits	Concentration	Concentration	Quotient
	Concern	Value	Urits	Velue	Units	for Hazard	ŀ	Urits		}		Urits	
						Calculation (1)				<u>'</u>			
geston	Berzo(e)erdirecere	300	ug/kg	300	upleg	a	3.8E-008	mg/kg-dey		mg/kg-day	N/A	NA SEE	
	Berzo(b)fluoranthene	407	ugAg	407	upfig	M	4.9E-008	mg/kg-day	-	mg/kg-day	N/A	N/A	-
	Bereco(e)pyrene	300	Lighte	300	ug/kg	M	3.6E-008	mg/kg-day	-	mg/kg-dity	N/A	N/A	-
	Indeno(1,2,3-cd)pyrene	220	ug/kg	220	ug/kg	M	2.8E-008	mg/kg-dey	-	mg/kg-day	N/A	N/A	-
	Arador-1254	387	ug/kg	367	ugAcg	M	4.6E-008	mg/kg-day	2.0E-005	mg/kg-day	N/A	N/A	2.3E-003
	Arseric	1917	make	1917	mg/kg	M	2.3E-004	mg/kg-dey	3.0E-004	mg/kg-day	N/A	N/A	7.7E-001
	(Total)		Ì		ł		1						7.7E-001
ermel	Bereo(e)erthracere	300	upAep	300	upfq	M	4.3E-008	mg/kg-day		mg/kg-day	NÃ	N/A	-
	Berzo(b)fluorerthene	407	uplep	407	upleg	M	5.8E-008	mg/kg-day	-	mg/kg-day	N/A	N/A	-
	Bereo(a)pyrene	300	upleg	300	upleg	M	4.3E-008	mg/kg-day	-	mg/kg-day	N/A	N/A	-
	Indeno(1,2,3-od)pyrene	220	upAq	220	ug/kg	M	3.1E-008	mg/kg-day	-	mg/kg-day	N/A	N/A	-
	Arodor-1254	387	ugAg	387	upkg	M	6.0E-008	mg/kg-day	2.0E-005	mg/kg-day	N/A	N/A	3 0E-003
	Arseric	1917	mg/kg	1917	ug/kg	M	6.3E-005	mg/kg-day	3.0E-004	mg/kg-day	N/A	N/A	2.1E-001
	(Total)	1 ' 1		l	1]	ţ		ļ	(2.1E-001

(1) Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

(2) Chronic.

-- Reference Dose not available, therefore Hazard Quotiers not calculated.

TABLE 7.5 RME CALCULATION OF NON-CANCER HAZARDS REABONABLE MAXIMUM EXPOSURE HORSESHOE ROAD COMPLEX SITE, SAYREVILLE, NEW JERSEY

Scenario Timeframe: Current and Future

Medium: Sediment

Exposure Medium: Sediment

Exposure Point: AOC 6 - RR

Receptor Population: Area Residents (Trespassets)

Receptor Age: Youth (12-17 years)

Exposure Route	Chemical of Polential	Medium EPC	Medium EPC	Route EPC	Route EPC	EPC Selected	Intake (Non-Cancer)	Intake (Non-Gancer)	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration	Hezerd Quotiênt
	Concern	Value	Units	Value	Units	for Hazard Calculation (1)		Units				Units	
gestion	The second secon		†		tion or cure					aan a - 12 7 -			ľ
ì	Arsenic	2200	mg/kg	2200	mg/kg	M	2 8E-004	mg/kg-day	3 0E-004	mg/kg-day	N/A	N/A	8 8E-001
	Copper	3560	mg/kg	3560	mg/kg	M	4.3E-004	mg/kg-day	4.0E-002	mg/kg-day	NA	N/A	1 1E-002
	Œ	tel)											8 9E-001
ermal	Arsenic	2200	mg/kg	2200	mg/kg	M	7.3E-005	mg/kg-day	3 0E-004	mg/kg-day	N/A	N/A	2 4E-001
	Copper	3560	mgfkg	3560	mgfkg	м	3.9€-005	mg/kg-day	4 0E-002	mg/kg-day	N/A	NA	9 8E-004
ì	· ·	stari)	1	1	i	l	1	1	1	1	1	1	2.4E-001

(1) Medium-Specific (M) or Route-Specific (R) EPC selected for hearrd culculation.

(2) Chronic.

- - Reference Dose not available, therefore Hazard Quotient not calculated.

TABLE 7 5.CT CALCULATION OF NON-CANCER HAZARDS CENTRAL TENDENCY EXPOSURE HORSESHOE ROAD COMPLEX SITE, SAYREVILLE, NEW JERSEY

Bosnario Timefrane: Current and Future

ledium: Sediment

Exposure Medium: Sediment Exposure Point: AOC 6 - RR

Receptor Population: Area Residents (Trespassers)

Receptor Age: Youth (12-17 years)

		Value	Unite	Value	Unite	Selected for Heaterd Calculation (1)	(Non-Cancer)	(Non-Cancer) Unite	Dose (2)	Dose Units	Concentration	Concentration Units	Quotient
Ingestion	nenic	450 1673	mghig mghig	450 1573	mg/kg mg/kg	M M	5.4E-005 1.9E-004	mg/kg-day mg/kg-day	3.0E-004 4.0E-002	mg/kg-day mg/kg-day	NYA NYA	N/A N/A	1.8E-001 4.7E-003 1.8E-001
Dermal Area Cop	ienic	450 1573	mg/kg mg/kg	450 1573	mg/kg mg/kg	M M	1.5E-005 1.7E-005	mg/kg-day mg/kg-day	3.0E-004 4.0E-002	mg/kg-day mg/kg-day	NVA NVA	NĀ NA	5.0E-002 4.3E-004 5.0E-002

(1) Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

(2) Chronic.

-- Reference Dose not available, therefore Hazard Quotient not calculated.

N/A - Not Applicable.

TABLE 7 56 RME CALCULATION OF NON-CANCER HAZARDS REAGONABLE MAXIMUM EXPOSURE HORSESHOE ROAD COMPLEX SITE, SAYREVILLE, NEW JERSEY

Scenario Timeframe: Future

Medium: Soil

Exposure Medium: Surface Soll Exposure Point: AOC 1 - HRDD Redeptor Population: Site Workers

ÌR	adenio.	r Ace:	Add 4

Exposure	Chémical	Medium	Medum	Route	Route	EPC	Intake	Intake	Reference	Reference	Reference	Reference	Hezerd
Route	of Potential	EPC	EPC	EPC	EPC	Selected	(Ndn-Cancer)	(Non-Cancer)	Dose (2)	Dose Units	Concentration	Concentration	Quotient
	Concern	Value	Units	Value	Units	for Hezerd		Units			i	Units	
			. [ļ	Calculation (1)		{					
pestion	Diektrin	120	ug/kg	120	ugikg		5.9E-008	mg/kg-day	5.0€-005	mg/kg-day	N/A	N/A	1.2E-003
	Aroclor-1248	9500	ug/kg	9500	ug/kg	M	4 7E-006	mg/kg-day	-	mg/kg-day	N/A	N/A	-
	Aroclor-1254	850	ug/kg	850	ug/kg	M	4 2E-007	mg/kg-day	2.0€-005	mg/kg-day	N/A	N/A	2 1E-002
	Aroclor-1260	720	ughg	720	ugfkg	M	3 5E-007	mg/kg-day	-	mg/kg-day	N/A	NA	-
	Aluminum	14250	Img/kg	14250	mg/kg	м	7.0E-003	mg/kg-day	1.06+000	mg/kg-dry	N/A	N/A	7.0E-003
	Antimony	3.4	mg/kg	3.4	mg/kg	M	1.7E-008	mg/kg-day	4.0E-004	mg/kg-day	N/A	N/A	4.2E-003
	Arsenic	53	mg/kg	53	mg/kg:	M	2 6E-005	mg/kg-day	3 0E-004	mg/kg-day	N/A	N/A	8.7E-002
	Cadmium	4.5	mg/kg	4.5	mg/kg	M	2.2E-006	mg/kg-day	1 0E-003	mg/kg-day	N/A	N/A	2.2E-003
	Copper	433	ing/kg	433	mg/kg	M	2.1E-004	mg/kg-day	4.0E-002	mg/kg-day	N/A	N/A	5.3E-003
	Manganese	420	mg/kg	420	mgfkg	M	2.1E-004	mg/kg-day	2.4E-002	mg/kg-day	N/A	N/A	8.6E-003
	Nichel	108	mg/kg	106	mg/kg	M	5.3E-005	mg/kg-day	2.0E-002	mg/kg-day	N/A	N/A	2.6E-003
	Silver	30	mgfkg	30	mg/kg	M	1.5E-005	mg/kg-day	5.0E-003	mg/kg-day	N/A	N/A	2.9E-003
	Thefflum	1	mg/kg	1	mg/kg	M	4.9E-007	mg/kg-day	7 0E-005	mg/kg-day	N/A	N/A	7.0E-003
	Vanedum	64	mg/kg	84	mg/kg	м	3.1E-005	mg/kg-day	7 0E-003	mg/kg-day	N/A	N/A	4 5E-003
	(Total)							l]			1.5E-001
mel	Dieldrin	120	ughg	120	ug/kg	T	6 8E-007	mg/kg-day	5.0E-005	mg/kg-day	N/A	N/A	1 4E-002
	Aroctor-1248	9500	ug/kg	9500	ugikg	M	7.6E-005	mg/kg-day	-	mg/kg-day	N/A	N/A	_
	Arottor-1254	850	ugfkg	850	ug/kg	M	6 8E-006	mg/kg-day	2 0E-005	mg/kg-day	N/A	N/A	3.4E-001
	Aroclor-1260	720	ughq	720	ughtg	M	5.7E-008	mg/kg-day	-	mg/kg-day	N/A	N/A	
	Akuminum	14250	mg/kg	14250	mg/kg	M	8.1E-003	mg/kg-day	1.0E+000	mgRig-day	N/A	N/A	8 1E-003
	Antimony	3.4	mg/kg	3.4	mg/kg	M	1.9E-006	mg/kg-day	4 0E-004	mg/kg-day	N/A	N/A	4 8E-003
	Arsenic	53	mg/kg	53	mgfig	M	9.1E-005	mg/kg-day	3.0E-004	mg/kg-day	N/A	N/A	3 0E-001
	Cadmium	4.5	mg/kg	4.5	mg/kg	M	2.6E-007	mg/kg-day	1 0E-003	mg/kg-day	N/A	N/A	2 6E-004
	Copper	433	mg/kg	433	mg/kg	M	2 5E-004	mg/kg-day	4.0E-002	mg/kg-day	N/A	N/A	8.2E-003
	Manganese	420	mg/kg	420	matka	M	2 4E-004	mg/kg-day	2.4E-002	mg/kg-day	N/A	NVA	1.0E-002
	Nickel	106	mg/kg	108	mg/kg	M .	6.2E-005	mg/kg-day	2.0E-002	mg/kg-day	N/A	N/A	3 1E-003
	Silver	30	mg/kg	30	mg/kg	M	1 7E-005	mg/kg-day	5.0E-003	mg/kg-day	NA	N/A	3 4E-003
	Thellum	1	mg/kg	1	mg/ng	M	5 7E-007	mg/kg-day	7.0E-005	mg/kg-day	N/A	N/A	8.1E-003
	Vanedum	64	mafka	64	mg/kg	M	3 8E-005	mg/kg-day	7.0E-003	mg/kg-day	NA	N/A	5 2E-003
	(Total)				1	1			l	1		1	7 0E-001

⁽¹⁾ Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

⁽²⁾ Chronic

⁻⁻⁻ Reference Dose not available, therefore Hazard Quotient not calculated.

N/A - Not Applicable

TABLE 7 6s RME CALCULATION OF MON-CANCER HAZARDS REASONABLE MAXIMUM EXPOSURE HORSESHOE ROAD COMPLEX SITE, SAVREVILLE, NEW JERSEY

Scenario Timefame: Future
Medum: Bott
Exposure Medum: Surface Soit
Exposure Point: ADC 2 - ADC
Receptor Population: Site Workers
Receptor Age: Adult

Exposure	Chemical	Medium	Medum	Route	Route	EPC	Intake	Intake	Reference	Reference	Reference	Reference	Hazard
Route	of Potential	EPC	EPC	EÞc	EPC	Selected	(Non-Cancer)	(Non-Cancer)	Dose (2)	Dose Units	Concentration	Concentration	Quotieni
	Concern	Value	Units	Value	Units	for Hazard		Units		1	Į	Units	
						Calculation (1)							
gestion	Benzo(a)enthracens	21000	ug/kg	21000	ugAkg	 	1 0€-005	rhg/kg-day	77	mg/kg-day	N/A	NUA	
	Benso(b)Ruoranthehe	30000	ug/kg	30000	ug/kg	M	1.5E-005	mg/kg-day	-	mg/kg-day	NVA	N/A	
	Benzo(#)pyrene	20000	ugfkg	20000	ugfkg	M	9 8E-006	mg/kg-day		mg/kg-day	N/A	N/A	
	Indeno(1,2,3-cd)pyrene	12000	ugfkg	12000	ugfkg	M	5.9E-006	mg/kg-day	-	mg/kg-day	N/A	N/A	
	Olbenso(a,h)anthracene	2300	ug/kg	2300	ug/kg	M	1.1E-006	mg/kg-day	-	mg/kg-day	N/A	N/A	-
	Aldrin	400	ugfig	400	ug/kg	M	2.0E-007	mg/kg-day	3.0E-005	mg/kg-day	N/A	N/A	6 5E-00
	Diektrin	740	ugfig	740	ug/kg	M	3.6E-007	rhg/kg-day	5.0E-005	mg/kg-day	N/A	N/A	7.3E-00
	Methoxychiar	980000	ug/kg	980000	ugfkg	M	4 8E-004	mg/kg-day	5.0E-003	mg/kg-day	N/A	N/A	9 8E-00
	Aroctor-1248	34000	ug/kg	34000	ug/kg	M	1 7E-005	ring/kig-day	-	mg/kg-day	N/A	NA	-
	Arocior-1280	2500	ugfkg	2500	ug/kg	M	1 2E-006	rhg/kg-day	-	mg/kg-day	N/A	NA	_
	2,3,7,8-TCDD equiv.	0.308	ug/kg	0.100	ug/kg	M	1.5E-010	rhg/kg-day	_	mg/kg-day	N/A	N/A	-
	Antimony	32	mg/kg	32	mg/kg	M	1.8E-005	mg/kg-day	4 0E-004	mg/kg-day	N/A	N/A	3 9E-0
	Arsenic	3640	mg/kg	3640	mg/kg	M	1.8E-003	mg/kg-day	3 0E-004	mg/kg-day	N/A	N/A	5.9E+0
	(Tat			21000		J				l			8.1E+0
mel	Benzo(a)anthracene	21000	uglig		ug/kg	M	1 6E-004	rhg/kg-day		mg/kg-day	N/A	N/A	
	Benzo(b)Ruoranthehe	30000	ughg	30000	ug/kg	M	2.2E-004	rhg/kg-day) ·-	mg/kg-day	NA	NVA) -
	Benzo(e)pyrene	20000	ug/kg	20000	ugfkg	M	1.5E-004	mg/kg-day	-	mg/kg-day	N/A	NA	-
	Indeno(1,2,3-ed)pytene	12000	ug/kg	12000	ug/kg	M	8.9E-005	mg/kg-day	-	mg/kg-day	N/A	N/A	-
	Dibenso(a,h)enthracene	2300	ug/kg	2300	ugfkg	M	1 7E-005	mg/kg-day	-	mg/kg-day	N/A	N/A	-
	Aldrin	400	ugfkg	400	ugfkg	M .	2 3E-008	mg/kg-day	3 0E-005	mg/kg-day	NA	N/A	7.6E-00
	Dieldtin	740	ug/kg	740	ug/kg	M	4 2E-006	rhg/kg-day	5 0E-005	mg/kg-day	N/A	NA	8 4E-00
	Methoxychlor	980000	ugfkg	980000	nayka	M	5.6E-003	rhg/kg-day	5 0E-003	mg/kg-day	N/A	N/A	1 1E+0
	Aroclor-1248	34000	ug/kg	34000	ugfkg	M	2 7E-004	mg/kg-day] -	mg/kg-day	N/A	N/A	
	Aroclor-1280	2500	ug/kg	2500	ug/kg	M	2 0E-005	mg/kg-day	-	mg/kg-day	N/A	N/A	-
	2,3,7,8-TCDD equiv.	0.306	ugfkg	0.308	ugfkg	M	5.3E-010	mg/kg-day	-	mg/kg-day	N/A	N/A	-
	Antimony	32	mg/kg	32	mg/kg	M	1.8E-005	mg/kg-day	4 0E-004	mg/kg-day	N/A	N/A	4 8E-0
	Arsenic	3640	mg/kg	3840	mg/kg	M	6.2E-003	mg/kg-day	3 0E-004	mg/kg-day	N/A	N/A	2 1E+0
	(Tot	at)	1	{	1	<u>.l</u>					1		2 2E+00

⁽¹⁾ Medium-Specific (M) or Route-Specific (R) EPC selected for heating calculation.

⁽²⁾ Chronic

⁻⁻⁻ Reference Dose not available, therefore Hazard Quotiers not calculated.

N/A - Not Applicable

TABLE 7.6a.CT CALCULATION OF NON-CANCER HAZAROS CENTRAL TENDENCY EXPOSURE HORSESHOE ROAD COMPLEX SITE, SAYREVILLE, NEW JERSEY

Scerario Timetrane: Future
Medium: Soll
Exposure Medium: Surface Soil
Exposure Point: AOC 2 - ADC
Recaptor Population: Site Workers
Recaptor Age: Adult

Exposure	Chemical	Medium	Medium	Route	Route	EPC	irtake	triske	Reference	Reference	Reference	Reference	Hezerd
Route	of Potential	EPC	EPC	EPC	EPC	Selected	(Non-Cancer)	(Non-Cancer)	Dose (2)	Dose Units	Concentration	Concentration	Quotier
	Concern	Value	Urits	Value	Urits	for Hezerd		Urite				Urits	
		}	}		}	Calculation (1)				1]		
reton	Bertro(a)erffyacerse	4554	uples	4534	uplig	†	9.1E-007	mg/kg-day		maka-dey	N/A	N/A	· -
	Berzo(b)fluoreréhene	7841	upto	7841	up/kg	M	1.6E-006	mg/kg-day	-	mg/kg-day	N/A	N/A	-
	Beaco(e)blease	5343	ug/kg	5343	ugAq	M	1.1E-008	mg/kg-day	-	mg/kg-day	N/A	N/A	-
	Indeno(1,2,3-cd)pyrene	3251	upto	3251	ugAg	M	6.5E-007	mg/kg-day	-	mg/kg-dey	N/A	N/A	_
	Olbenzo(a,h)er#vacene	2532	uphy	2532	upArg	M	5.1E-007	mg/kg-day	-	mg/kg-day	NA	N/A	-
	Aldin	114	upAq	114	ug/kg	M	2.3E-008	mg/kg-day	3.0E-005	mg/kg-day	N/A	N/A	7.6E-0
	Dieldrin	200	uplep	200	upho	M	4.0E-006	mg/kg-day	5.0E-005	mg/kg-day	NA	N/A	8.0E-0
	Methoxychian	72823	Lightg	72623	upkg	M	1.5E-005	mg/kg-day	5.0E-003	mg/kg-day	N/A	N/A	2.9E-0
	Arodor-1248	7350	ug/kg	7359	uptop	M	1.5E-006	mg/kg-day	-	mg/kg-dey	N/A	N/A	-
	Arodor-1260	1500	uptep	1500	up/kg	M	3.0E-007	mg/kg-day	-	mg/kg-day	N/A	N/A	-
	2,3,7,8-TCDD eq.(v.	0.15	ug/kg	0.15	ug/kg	M	3.0E-011	mg/kg-day	-	mg/kg-day	N/A	N/A	_
	Artimony	2.7	mg/kg	2.7	mgAgg	M	5.4E-007	mg/kg-day	4.0E-004	mg/kg-day	N/A	N/A	1.4E-0
	Arseric (Tab	46	mg/kg	46	mg/kg	M	9.2E-006	mg/kg-day	3.0E-004	mg/kg-day	N/A	N/A	3.1E-0 3.6E-0
	Bertro(e)er#racene	4534	LIDAG	4534	ug/kg	M	2.1E-005	mg/kg-dey	<u> </u>	marko-dey	N/Ā	N/A	J.02-0
	Bengo(b)(kupranthera	7841	up/cp	7841	up/m	l M	3.7E-005	mg/kg-day	-	mg/kg-day	N/A	N/A	_
	Berzo(a)pyrene	5343	Lights	5343	upArg	M	2.5E-005	mg/kg-day	_	make-dev	N/A	N/A	_
	Indeno(1,2,3-cd)pyrene	3251	uptep	3251	upArg	M	1.5E-005	mg/kg-day	-	mg/kg-day	N/A	N/A	-
	Dibergo(s.h)enfracene	2532	upho	2532	unfo	M	1.2E-005	mg/kg-dey	-	marka-day	N/A	N/A	_
	Aldtin	114	ughp	114	up/leg	M	4.1E-007	mg/kg-dey	3.0E-005	make-dev	N/A	N/A	1.4E-0
	Creidin	200	Ug/kg	200	up/kg	M	7.2E-007	mg/kg-day	5.0E-005	mg/ku-day	N/A	N/A	1.4E-0
	Methoxychlor	72623	ugAg	72623	CINECUL	M	2.6E-004	mg/kg-dey	5.0E-003	mg/kg-day	N/A	N/A	5.2E-0
	Arodor-1248	7350	upfeg	7359	up/kg	M	3.7E-005	mg/kg-day	_	mg/kg-dey	N/A	N/A	-
	Arodor-1200	1500	uplep	1500	UD/kg	M	7.6E-006	mg/kg-day	_	mg/kg-day	N/A	N/A	_
	2,3,7,8-TCDD eq.iv.	0.15	upfee	0.15	upho	M	1.6E-010	mg/kg-day	_	mg/kg-day	N/A	N/A	-
	Aritmony	2.7	maka	2.7	mgAeg	M	9.7E-007	mg/kg-day	4.0E-004	mg/kg-day	N/A	N/A	2.4E-0
	Arseric	48	make	46	mg/kg	M	5.0E-005	mg/kg-day	3.0E-004	mg/kg-day	N/A	N/A	1.7E-0

⁽¹⁾ Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

⁽²⁾ Chronic.

⁻⁻ Reference Dose not available, therefore Hazard Quotient not calculated. N/A - Not Applicable.

TABLE 7.6e RME CALCULATION OF NON-CANCER HAZARDS REASONABLE MAXIMUM EXPOSURE HORSESHOE ROAD COMPLEX SITE, SAYREVILLE, NEW JERSEY

Scenario Timeframe: Future Exposure Medium: Surface Soll Exposure Point AOC 3 - SPD Receptor Population: Site Workers Receptor Age: Adult

Exposuré	Chemical	Medium	Medium	Route	Route	EPC	hteke	intaire	Reference	Reference	Reference		
Route	of Potential	EPC	EPC	EPC	EPC	Selected	(Non-Cartcer)	(Non-Cancer)	Dose (2)	Dose Units		Reference	Hazar
	Concern	Value	Unite	Value	Units	for Hazard	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	Units	1000 (2)	DOSE UNIS	Concentration	Concentration	Quotie
	<u>.</u>					Calculation (1)		~~~				Units	
estion	Benzo(a)enthracene	1761	ug/kg	1761	ug/kg	M	8 3E-007	mg/kg-day			N/A		<u> </u>
	Benso(b)fluorenthene	2883	ugAvg	2883	ug/kg	 M	1 4E-008		-	mg/kg-day	1		-
	Benzo(s)pyrene	1488	ug/kg	1468	ugfkg	🐃	7.2E-007	mg/kg-day	-	mg/kg-day	N/A	N/A	-
	Indeno(1,2,3-cd)pyrene	1302	ugfing	1302	ug/kg	, m	6.4E-007	mg/kg-day	-	mg/kg-day	N/A	NA	-
	Methoxychlor	650000	ug/kg	850000	ug/kg	- -	3.2E-004	mg/kg-day		mg/kg-day	N/A	NA	-
	Aluminum	8432	mg/kg	8432	mg/kg	~	4 1E-003	mg/kg-day	5.0E-003	mg/kg-day	N/A	N/A	6.4E-00
	Antimony	17	mg/kg	17	maña		8.3E-008	mg/kg-day	1.0E+000	mg/kg-day	N/A	N/A	4.1E-0
	Arstnic	24	marka	24	mg/kg	<u> </u>	1.2E-005	mg/kg-day	4.0E-004	mg/kg-day	NA	NA	2.1E-0
	Copper	1519	mg/kg	1519	mg/kg	~	1.2E-005 7.4E-004	mg/kg-day	3 0E-004	mg/kg-day	N/A	N/A	3 9E-0
	Manganese	215	mg/kg	215	marka			mg/kg-day	4.0E-002	mg/kg-day	N/A	N/A	1.9E-0
	Thelium	0.92	marka	0.92		,	1.1E-004	mg/kg-day	2 4E-002	mg/kg-day	N/A	NA	4.4E-0
	Variedum	37	mafka	37	mg/kg		4.5E-007	mg/kg-day	7.0E-005	mg/kg-day	N/A	N/A	6 4E-0
	(Tot	I	""""	j "	mg/kg	•	1.8E-005	mg/kg-day	7.0E-003	mg/kg-day	N/A	NA	_ 2 8E-0
mei	Benzo(s)enthracene	1701	ugha	1701									1 0E-00
	Bertzo(b)fluoranthene	2883	ug/kg	2883	ugfig	M M	1.3E-005	mg/kg-day	-	mg/kg-day	······································	N/A	
	Benzo(a)pyrene	1488	ug/kg	1468		M	2.1E-005	mg/kg-day	-	mg/kg-day	N/A	NA	-
	Indeno(1,2,3-ed)pyrene	1302	ugikg	1302	ugfkg		1 1E-005	mg/kg-day	-	mg/kg-day	N/A	N/A	-
	Methoxychlor	650000	ug/kg	650000	ugfkg	M	9.6E-006	mg/kg-day	-	mg/kg-day	N/A	NA	
-	Aluminum	8432	mg/kg	8432	ugfkg	M	3.7E-003	mg/kg-day	5.0E-003	mg/kg-day	N/A	N/A	7.4E-00
	Antimony	17	marke	17	mg/kg	M	4 8E-003	mg/kg-day	1 0E+000	mg/kg-day	N/A	N/A	4 8E-00
	Arstnic	24			mg/kg	M	9.7E-006	mg/kg-day	4 0E-004	mg/kg-day	N/A	NA	2 4E-00
I	Copper	1519	mg/kg mg/kg	24 1519	mg/kg	M	4.1E-005	mg/kg-day	3 0E-004	mg/kg-day	N/A	N/A	1 4E-00
	Mengenese	215		215	mg/kg	M	8.7E-004	mg/kg-day	4 0E-002	mg/kg-day	N/A	N/A	2.2E-00
	Thellum	0.92	mgNg		mg/kg	м	1 2E-004	mg/kg-day	2.4E-002	mg/kg-day	N/A	N/A	5 1E-00
ł	Vanadum	37	mg/kg	0.92	mg/kg	м	5 2E-007	mg/kg-day	7.0E-005	mg/kg-day	N/A	N/A	7 5E-00
	(Tota		mg/kg	37	mg/kg	M	2.1E-005	mg/kg-day	7 DE-003	mg/kg-day	N/A	N/A	3 DE-00

⁽²⁾ Chronic

^{-- -} Reference Dose not available, therefore Hazard Quotient not calculated. N/A - Not Applicable.

TABLE 7 6s RME CALCULATION OF NON-CANCER HAZARDS REASONABLE MAXIMUM EXPOSURE HORSESHOE ROAD COMPLEX SITE. SAVREVILLE, NEW JERSEY

Scenerio Timeframe: Future
Medium: Soil
Exposuré Medium: Surface Soil
Exposuré Point: AOC 4 - ARC
Receptor Population: Site Workers

Receptor Age: Adult

Exposure Roule	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intaite (Non-Cancer)	(Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazarti Quotier
estion	Benzotbiliuoranthene	2800	uaka	2600	Ug/kg		1.56-008	mg/kg-day		mg/kg-day	N/X	 - NOT	
	Benzo(a)pyrane	1800	ugArg	1800	ugfitg	M	8.6E-007	mg/kg-day	_	mg/kg-day	N/A	N/A	
	Hexachlorobutadene	6800	ugfkg	6600	ugAg	M	3 3E-006	mg/kg-day	2.0E-004	mg/kg-day	N/A	NA	1 7E-00
	Hexachlorocyclopentadiene	57440	ug/kg	57440	ug/kg	M	2 8E-005	mg/kg-day	7.0E-003	mg/kg-day	NA	N/A	4 DE-00
	Aldrin	22	ugfkg	22	ugfig	M	1.1E-008	mg/kg-day	3.0E-005	mg/kg-day	NA	N/A	3.6E-0
	Arocior-1248	801	ugfkg	891	ugfig	M	4.4E-007	mg/kg-day	_	mg/kg-day	N/A	N/A	-
	Aroctor-1254	1041	ug/kg	1941	ugfkg	м	9.5E-007	mg/kg-day	2.0E-005	mg/kg-tlay	NA	N/A	4 8E-00
	Aroctor-1260	465	ugftg	465	ug/kg	M	2.3E-007	mg/kg-day	_	mg/kg-day	NA	N/A	_
	2.3,7.8-TCDD equiv.	0.2	ug/kg	02	ug/kg	M	9.8E-011	mg/kg-day	-	mg/kg-day	NA	N/A	-
	Akminum	15500	mg/kg	15500	mgftg	M	7.6E-003	mg/kg-day	1.0E+000	mg/kg-day	N/A	N/A	7.8E-0
	Antimony	18	mg/kg	18	mg/kg	M	8.8E-008	mg/kg-day	4.0E-004	mg/kg-day	N/A	N/A	2 2E-0
	Arsenic	27	mg/kg	27	mg/kg	M	1.3E-005	mg/kg-day	3.0E-004	mg/kg-day	N/A	N/A	4 4E-0
	Cadmium	37	mg/kg	37	mg/kg	M	1 8E-005	mg/kg-day	1.0E-003	mg/kg-day	N/A	N/A	1 8E-0
	Copper	501	mg/kg	591	mg/kg	M	2.9E-004	mg/kg-day	4.0E-002	mg/kg-day	NA	N/A	7 2E-0
	Manganese	461	mg/kg	461	mg/kg	M	2.3E-004	mg/kg-day	2.4E-002	mg/kg-day	N/A	N/A	9 4E-0
	Nickel	298	mg/kg	296	mg/kg	M	1.5E-004	mg/kg-day	2.0E-002	mg/kg-day	N/A	N/A	7 3E-0
	Silver	287	mg/kb	287	mg/kg	M	1 4E-004	mg/kg-day	5.0E-003	mg/kg-day	N/A	N/A	2 8E-0
	Thellum	0.72	mg/kg	0.72	mg/kg	M	3.5E-007	mg/kg-day	7 0E-005	mg/kg-day	N/A	N/A	5 0E-0
	Zinc (Totel)	9172	mg/ktg	9172	mg/kg	M	4 5E-003	mg/kg-day	3 0E-001	mg/kg-day	NA	NVA	1.5E-0
nel	Benzo(b)fluoranthene	2000	ug/kg	2600	ug/kg	м .	1 9E-005	mg/kg-day	······································	mg/kg-day	NVA	NVA	-
	Benzo(a)pyrene	1800	ug/kg	1800	ug/kg	M	1 3E-005	mg/kg-daty	-	mg/kg-day	N/A	N/A	-
	Hexachlorobatacione	6800	ug/kg	6800	ughig	M	3 9E-005	mgfkg-day	2.0E-004	mg/kg-day	N/A	NA	1 9E-0
	Hexachlorocyclopentacliene	57440	ug/tg	57440	ug/kg	M	3.3E-004	mg/kg-day	7.0E-003	mg/kg-day	N/A	NA	4 7E-0
	Aldrin	22	ug/kg	22	ug/kg	M	1.3E-007	mg/kg-dey	3 0E-005	mg/kg-day	N/A	N/A	4 2E-0
	Arodor-1248	801	ng/kg	891	ug/kg	M	7 1E-008	mg/kg-day	-	mg/kg-day	N/A	NA	-
	Aroclor-1254	1941	nayea	1941	ug/kg	M	1 5E-005	mg/kg-day	2 0E-005	mg/kg-day	NVA	N/A	7.7E-0
	Arador-1260	466	ug/kg	485	ugArg	M	3.7E-006	mg/kg-day	-	mg/kg-day	N/A	N/A	-
	2.3.7.8-TCDD equiv.	0.2	ug/kg	0.2	ug/kg	M	3 4E-010	mg/kg-day	-	mg/kg-day	N/A	N/A	-
	Aluminum	15500	mg/kg	15500	mg/kg	M	8 8E-003	mg/kg-day	1 0E+000	mg/kg-day	N/A	N/A	8 8E-0
	Artimony	18	mg/kg	18	mg/kg	M	1 0€-005	mg/kg-day	4.0E-004	mg/kg-day	N/A	N/A	2 8E-0
	Arsenic	27	mg/kg	27	mg/kg	M	4 6E-005	mg/kg-day	3.0E-004	mg/kg-day	N/A	N/A	1 5E-0
	Cadmium	37	mg/kg	37	mg/kg	M	2 1E-008	mg/kg-day	1.0E-003	mg/kg-day	N/A	N/A	2 1E-0
	Copper	501	mg/kg	591	mg/kg	M	3 4E-004	mg/kg-day	4.0E-002	mg/kg-day	N/A	N/A	8 4E-0
	Manganèse	461	mg/kg	461	mg/kg	M	2 8E-004	mg/kg-day	2.4E-002	mg/kg-day	N/A	NA	1 1E-0
	Nickel	296	mg/kg	298	mg/kg	M	1.7E-004	mg/kg-day	2.0E-002	mg/kig-day	N/A	N/A	8 4E-0
	Silver	287	mg/kg	287	mg/kg	M	1 8E-004	mg/kg-day	5 0E-003	mg/kg-day	N/A	N/A	3 3E-0
	Thellum	0.72	mg/kg	0.72	mg/kg	M	4 1E-007	mg/kg-day	7 0E-005	mg/kg-day	N/A	N/A	5 9E-0
	Zinc	9172	mg/kg	9172	mg/kg	M	5 2E-003	mg/kg-day	3 0E-001	mg/kg-day	N/A	N/A	1 7E-0

⁽¹⁾ Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

⁽²⁾ Chronic

⁻⁻ Reference Dose not available, therefore Hazard Quotient not calculated.

TABLE 7.6a.CT CALCULATION OF NON-CANCER HAZARDS CENTRAL TENDENCY EXPOSURE HORSESHOE ROAD COMPLEX SITE, SAYREVILLE, NEW JERSEY

Medium: Soll Exposure Medium: Surface Soil Exposure Point: AOC 4 - ARC Receptor Population: Site Workers

್ರಾಗ್ ಗಳಗಳ ಸರ್ವವ ಕರ್ಮನವರು ಕೆಗಳು ನಿರ್ವಹಣ್ಣ.

Exposure Route	Chemical of Potential	Medum EPC	Medium EPC	Route EPC	Route EPC	EPC Selected	Intake (Non-Cancer)	Intake (Non-Cancer)	Reference Dose (2)	Reference Dose Units	Reference	Reference	Heard
	Concern	Value	Units	Value	Units	for Heard Calculation (1)	(1011000)	Units	D000 (2)	Cose Units	Concentration	Concentration Units	Quotie
etion	Benzo(b)Augranthene	1664	ugikg	1804	ughq	 M	3.4E-007	mg/kg-day		mg/kg-day	N/A	NZA	
	Benzo(a)pyrene	1640	ugfig	1840	ug/kg	M	3 3E-007	mg/kg-day	_	mg/kg-day	N/A	N/A	-
	Hexachlorobutadene	1879	ugfig	1879	uglig	м	3.8E-007	mg/kg-day	2.0E-004	mg/kg-day	N/A	N/A	1.9E-00
	Hexachlorocyclopentadiene	846	ugfig	846	ughg	M	1.7E-007	mg/kg-day	7.0E-003	mg/kg-day	N/A	N/A	1.0E-0
	Alctin	1.0	ugfig	1.6	uglig	M 1	3.2E-010	mg/kg-day	3.0E-005	mg/kg-day	N/A	N/A	1.1E-0
	Arodor-1248	43	ug/kg	43	ughg	M	8.6E-009	mg/kg-day	-	mg/kg-day	N/A	N/A	1.16-U
	Aroclor-1254	62	ughg	62	ug/kg	M	1.2E-008	mg/kg-day	2.0E-005	mg/kg-day	N/A	N/A	
	Arodor-1260	44	ugfkg	44	ugfeg	м	8.8E-009	mg/kg-day	-	mg/kg-day	N/A	N/A	6.2E-0
	2,3,7,8-TCDD equiv.	0.12	ugfig	0.12	ugilig	M	2.4E-011	mg/kg-day	_	mg/kg-day	N/A	N/A	-
	Aluminum	6918	mgRig	6918	maftig	M	1.4E-003	mg/kg-day	1 0E+000	mg/kg-day	N/A	N/A	
	Artimony	3.5	mgfkg	3.5	mgfkg	, m	7.0E-007	mg/kg-day	4.0E-004	mg/kg-day	N/A	N/A	1.4E-0
	Areanic	9.7	mofto	9.7	mafka	1 11 1	1.9E-008	mg/kg-day	3.0E-004		N/A		1.8E-0
	Cadmium	1.3	mg/kg	1.3	matea	i m	2.6E-007	mg/kg-day	1.0E-003	mg/kg-day	N/A	N/A N/A	0.5E-0
	Copper	174	make	174	marke	M	3.5E-005	mg/kg-day	4.0E-002	mg/kg-day	N/A		2.6E-0
	Marganese	123	mg/kg	123	mg/kg	iii	2.5E-005	mg/kg-day	2.4E-002	mg/kg-day	N/A	N/A	8.7E-0
	Nicited	21	marka	21	mg/kg	M	4.2E-006	mg/kg-day	2.0E-002	mgftg-day	N/A	N/A	1 0E-0
	Silver	66	mafica	66	mg/kg		1.3E-005	mg/kg-day	5.0E-003	mg/kg-day	N/A	N/A	2.1E-0
	Thellum	0.53	make	0.53	mg/kg		1.1E-007	mg/kg-day	7.0E-005	mg/kg-day	N/A	N/A	2.6E-0
	Zinc	108	mg/kg	106	mg/kg		2.2E-005	1		mg/kg-day		N/A	1.5E-00
	(Total)						2.22-003	mg/kg-day	3.0E-001	mg/kg-day	N/A	N/A	7.2E-00
1	Benzo(b)fluoranthene	1604	upto	1694	uo/kg	l M	7.9E-008	mg/kg-day	<u> </u>		N/A	N/A	1.0E-00
	Benso(s)pyrane	1840	ugfkg	1840	ugftg	m	7.7E-006	mg/kg-day		mgfkg-day	N/A		-
	Hexachiorobutedene	1879	uphq	1879	upha	"	6.8E-006	mg/kg-day	2.0E-004	mgftq-day	N/A	N/A	-
	Hexachlorocyclopentaciene	846	ugfig	848	ughg		3.0E-008			mg/kg-day		N/A	3.4E-00
	Aldrin	1.0	ughq	1.6	ughg		5.8E-009	mg/kg-day mg/kg-day	7.0E-003 3.0E-005	mg/kg-day	N/A	N/A	4.4E-00
	Arocior-1248	43	ughg	43	ughg		2.2E-007			mg/kg-day	N/A	N/A	1 9E-0
	Aroclor-1254	62	ughg	62	uphq		3.1E-007	mg/kg-day		mg/kg-day	N/A	N/A	-
	Arodor-1260	44	upho	44	ughg		2.2E-007	mg/kg-day	2.0E-005	mg/kg-day	N/A	N/A	1.6E-00
	2,3,7,8-TCDD eq.(v.	0.12	upho	0.12	upfep			mg/kg-day	-	mg/kg-day	N/A	N/A	-
	Akardinum	6918	marka	6918	mafea		1.3E-010	mg/kg-day		mg/tq-day	N/A	N/A	-
	Antimony	3.5	marka	3.5	marka	l	2.5E-003	mg/kg-day	1.0E+000	mg/kg-day	NVA	N/A	2.5E-0
	Arsenic	9.7	marka	9.7			1.3E-008	mg/kg-day	4.0E-004	mg/kg-day	N/A	NA	3 2E-00
	Cadnium	1.3	marka	1.3	mg/kg mg/kg		1.0E-005	mg/kg-day	3.0E-004	mg/kg-day	N/A	NVA	3.5E-0
	Copper	174	marko	174			4.7E-008	mg/kg-day	1.0E-003	mg/kg-day	N/A	NVA	4.7E-0
	Managenese	123	marka	123	mg/kg	"	6 3E-005	mg/kg-day	4.0E-002	mg/kg-day	NA	N/A	1.6E-0
	Nichel	21	1		mg/kg		4.4E-005	mg/kg-day	2.4E-002	mg/kg-day	N/A	N/A	1 8E-0
	Silver	66	mg/kg	21 66	marka		7.6E-006	mg/kg-day	2.0E-002	mg/kg-day	N/A	N/A	3.8E-00
	Theilum	0.53	mgNg		marka	M	2.4E-005	mg/kg-day	5.0E-003	mg/kg-day	N/A	N/A	4.8E-00
	Zinc	0.53 108	mgfeg	0.53	mg/kg	<u>M</u>	1.9E-007	mg/kg-day	7 0E-005	mg/kg-day	N/A	N/A	2 7E-00
	l I	106	mg/kg	106	mg/kg	M	3.9E-006	mg/kg-day	3.0E-001	mg/kg-day	N/A	N/A	1.3E-00
	(Total)		1			1 1	1				İ		1 0E-0

⁽¹⁾ Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

⁽²⁾ Chronic.

⁻⁻ Reference Dose not evallable, therefore Hazard Quotiers not calculated. N/A - Not Applicable.

TABLE 7.65.RME CALCULATION OF NON-CANCER HAZARDS REASONABLE MAXIMUM EXPOSURE HORSESHOE ROAD COMPLEX SITE, BAYREVILLE, NEW JERSEY

Scenario Timetrame: Future

Medium Soll

Exposure Medium: Subsurface Soil Exposure Point AOC 1 - HRDD Receptor Population. Site Workers

	Receptor Population. Site W Receptor Age: Adult	cirkers		ľ									
	1			[=======::	j]	/: : ···	i		T	T	I	I =
Exposure	Chemical	Medum	Medium	Route	Rouse	EPC	Intake	Intake	Reference	Reference	Referènce	Reference	Hazard
Route	of Potential	EPC	EPC	EPC	EPC	Selected	(Non-Cancer)	(Non-Cancer)	Dose (2)	Doed Units	Concentration	Concentration	Quotien
	Concern	Value	Units	Value	Units	for Hezerd Calculation (1)		Units				Units	
noffee						 					en a terre o	r : : ::::::::::::::::::::::::::::::::	
	Aroclor-1248	1300	ugfig	1300	ug/kg	M	6.4E-007	mg/kg-day	-	mg/kg-day	N/A	N/A	-
	Arodor-1254	96	ugfkg	98	ug/kg	l w	4.7E-008	mg/kg-day	2.0E-005	mg/kg-day	N/A	NA	2 4E-00
	Aroclor-1260	3100	ugfkg	3100	ug/kg	M	1.5E-008	mg/kg-day	-	mg/klg-day	NA	N/A	-
	Aluminum	10685	mg/kg	10685	mg/kg	[M	5 2E-003	mig/kg-day	1 0E+000	mg/kg-day	N/A	N/A	5.2E-00
	Antimony	5.1	mg/kg	51	mg/kg	M	2 SE-008	mg/kg-day	4.0E-004	mg/kg-day	N/A	N/A	6 2E-00
	Arsenic	24.5	mgArg	24.5	mg/kg	M	1.2E-005	mg/kg-dey	3.0E-004	mg/kg-day	N/A	N/A	4 0E-00
	Cadmium	4.4	mg/kg	4.4	mg/kg	M	2 2E-008	mig/kg-day	1 ØE-003	mg/kg-day	N/A	N/A	2.2E-00
	Copper	1222	mg/kg	1222	mg/kg	M	6.0E-004	mig/kg-day	4 ØE-002	mg/kg-day	NA.	N/A	1.5E-00
	Manganese	486	mg/kg	486	mgAg	M	2 4E-004	mig/kg-day	2.4E-002	mg/kg-day	NA	N/A	9 9E-00
	Nickel	174	mg/kg	174	mg/kg	M	8 BE-005	migrieg-day	2 0E-002	mg/kgi-day	N/A	N/A	4.3E-00
	TheBum	2.5	mg/kg	25	mg/kg	M	1.2E-006	mig/kg-day	7.0E-005	mg/kg-day	N/A	N/A	1 8E-00
	Vanadum	50	mg/kg	50	mg/kg	M	2 5E-005	mg/kg-day	7.0E-003	mg/kg-day	N/A	NA	3 5E-00
	(Total)	l						İ	ļ				1 16-00
mili			1		1			1		1		i	1
	Arocior-1248	1300	ugfkg	1300	ugfkg	M	1 DE-005	mg/kg-day	-	mg/kg-day	N/A	N/A	
	Aroctor-1254	96	ug/kg	96	ugfkg	M	7 7E-007	mg/kg-day	2 0E-005	mg/kip-day	NA.	N/A	3 8E-00
	Aroctor-1260	3100	ug/kg	3100	ugfkg	м	2 6E-005	mg/kg-day	-	mg/kg-day	N/A	N/A	-
	Aluminum	10685	mg/kg	10685	mg/kg	M	6 1E-003	mig/kg-day	1 (E+000	mg/kg-day	N/A	N/A	6 1E-00
	Antimony	5.1	mg/kg	51	mg/kg	M	2.9E-008	mig/kg-day	4 QE-004	mg/kg-day	N/A	N/A	7.3E-00
	Arsenic	24.5	mg/kg	24.5	mg/kg	M	4 2E-005	mig/kg-day	3.0E-004	mg/kg-day	INA	N/A	1 4E-00
	Cadmium	44	mg/kg	44	mg/kg	M	2 SE-007	mg/kg-day	1 0 E-003	mg/kg-day	N/A	N/A	2 5E-00
	Copper	1222	mg/kg	1222	mg/kg	М	7.0E-004	mg/kg-day	4 0E-002	mg/kg-day	N/A	N/A	1 7E-0
	Mangenese	488	mg/kg	486	mg/kg	M	2 8E-004	mg/kg-day	2 4E-002	mg/kg-day	NA	NVA	1 2E-0
	Nickel	174	mgfkg	174	mg/kg	į M	9 9E-005	mg/kg-day	2 0E-002	ing/kg-day	N/A	N/A	5 0E-00
	Thellium	2.5	mg/kg	2.5	mg/kg	M	1 4E-006	mg/kg-day	7.0E-005	mg/kg-day	N/A	N/A	2 0E-00
	Vanadum	50	mg/kg	50	mg/kg	M	2 9E-005	mg/kg-day	7 0E-003	mg/kg-day	N/A	NA	4 1E-00
	(Total)	·	{	l .	1		l	J .	I.,	l .	l	1	2 5E-00

(1) Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

(2) Chronic

--- Reference Dose not available, therefore Hazard Quotient not calculated.

N/A - Not Applicable

TABLE 7.6b.RME CALCULATION OF NON-CANCER HAZARDS REASONABLE MAXIMUM EXPOSURE HORSESHOE ROAD COMPLEX SITE, BAYREVILLE, NEW JERSEY

Scenario Timehame: Fulure
Medum: Sdl
Exposure Medum: Test Pit Soll
Exposure Point: AQC 1 - HRDD
Receptor Population: Site Workers
Receptor Age: Adult

Exposure	Chemical	Medium	Medium	Route	Route	EPC	b-Enlop	irtaice	Reference	Reference	Reference	Reference	Hezerd
Route	of Potertial	EPC	EPC Units	EPC Value	EPC Units	Selected	(Non-Cancer)	(Non-Camper)	Dose (2)	Dose Urits	Concentration	Concentration	Quotient
	Concern	Value	Unis	VIII,II	Units	for Hezerd Calculation (1)		Urits				Units	
ngesian	Bertro(a)pyrene	1348	upleg	1348	up/kg	Ä	6.6E-007	mg/kg-day		mg/kg-day	RA	N/A	∤·· · <u>·</u> _··
	Arador-1248	41000	upto	41000	ugAtg	M	2.0E-005	mg/kg-day	-	mg/kg-day	NA	N/A	۱ -
	Arodor-1254	6200	Lightig	6200	ug/kg	M	3.0E-006	mg/kg-day	2.0E-005	mg/kg-day	N/A	N/A	1.5E-001
	Artimony	1308	make	1306	mg/kg	M	6.4E-004	mg/kg-day	4.0E-004	mg/kg-day	NA	N/A	1.6E+000
	Arseric	707	mg/kg	707	mgArg	M	3.5E-004	mg/kg-day	3.0E-004	mg/kg-dey	N/A	NA	1.2E+000
	(Total)		1									1	2.9E+000
Dermel	Berzo(a)pyrene	1346	upleg	1346	ugAq	M M	1.0E-005	mg/kg-day		mg/kg-day	N/A	NA	-
	Arodor-1246	41000	ug/kg	41000	ug/kgt	М	3.3E-004	mg/kg-day	_	mg/kg-day	N/A	N/A	_
	Arodor-1254	6200	uplep	6200	ug/kg	M	4.9E-005	mg/kg-day	2.015-005.	mg/kg-day	N/A	N/A	2.5E+000
	Aremony	1306	mg/kg	1308	mg/kg	M	7.5E-004	mg/kg-day	4.0E-004	mg/kg-day	N/A	N/A	1.9E+000
	Arseric	707	mg/kg	707	mg/kg	M	1.2E-003	mg/kg-day	3.0E-004	mg/kg-day	N/A	N/A	4.0€+000
	(Total)]				l .		i	}		1	8.4E+000
	the ground agrangement of the	**************************************			•••	· -u:		•		Total Hazard Inde	x Across All Exposur	e Routes/Pathways	1.1E+001

(1) Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

(2) Chraric.

--- Reference Dose not available, therefore Hazard Quotient not calculated. N/A - Not Applicable.

TABLE 7.8b.CT CALCULATION OF NON-CANCER HAZARDS CENTRAL TENDENCY EXPOSURE HORSESHOE ROAD COMPLEX SITE, SAYREVILLE, NEW JERSEY

Scarusio Timeframe: Fultre
Medium: Soil
Exposure Medium: Test Pit Soil
Exposure Point: ACC 1 - HRDD
Receptor Population: Site Workers
Receptor Age: Adult

Епровите	Chemical	Medium	Medium	Route	Route	EPC	irdake	Irtake	Reference	Reference	Reference	Reference	Hezerd
Route	of Potersal	EPC	EPC	EPC	EPC	Selected	(Non-Cancer)	(Non-Cancer)	Dose (2)	Dose Units	Concentration	Concentration	Quotient
	Concern	Value	Urits	Value	Urits	for Hezerd		Units				Urite	
]		!			Calculation (1)						_	
geston	Beneo(a)pyrene	184	ug/kg	184	ug/kg	W	3.7€-006	mg/kg-day		mg/kg-day	NZA	N/A	_
	Arodor-1248	3662	ugAg	3882	ug/kg	M	7.8E-007	mg/kg-day	-	mg/kg-dey	N/A	N/A	_
	Arodor-1254	1105	uptro	1105	ug/kg	М	2.2E-007	mg/kg-day	2.0E-005	mg/kg-day	N/A	N/A	1.1E-00
	Artimony	3.2	mg/kg	3.2	mg/kg	M	8.4E-007	mg/kg-day	4.0E-004	mg/kg-day	NA	N/A	1.8E-00
	Arseric	33	mg/kg	33	mg/kg	M	6.6E-006	mg/kg-day	3.0E-004	mg/kg-day	NA	N/A	2.2E-00
	(Total)		1		1			1					3.5E-00
ermal	Berwo(e)pyrwne	184	upleg	184	Leples	M	8.6E-007	mg/kg-day		mg/kg-day	ÑÀ	NA	· <u>-</u>
	Aradar-1248	3882	ugAg	3882	Lights	M	2.0E-005	mg/kg-day	-	mg/kg-day	N/A	N/A	-
	Arodor-1254	1105	LugArg	1105	ugAeg	M	5.6E-008	mg/kg-day	2.0E-005	mg/kg-day	N/A	N/A	2.8E-00
	Artimorty	3.2	maka	3.2	mg/kg	M	1.2E-006	mg/kg-day	4.0E-004	mg/kg-day	NA	N/A	2.9E-00
	Arseric	33	mg/kg	33	mg/kg	M	3.8E-005	mg/kg-day	3.0E-004	mg/kg-day	N/A	N/A	1.2E-00
	(Total)				1							f f	4.0E-00

- (1) Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.
- (2) Chearle.
- -- Reference Dose not available, therefore Hazard Quotient not calculated, N/A Not Applicable.

TABLE 7.66 RME CALCULATION OF NON-CANCER HAZARDS REASONABLE MAXIMUM EXPOSURE HORSESHOE ROAD COMPLEX BITE, SAYREVILLE, NEW JERSEY

Scenario Timerisme. Future
Medium. Solf
Exposure Medium: Subsurface Boll
Exposure Point: AOC 2 - ADC
Receptor Population: Site Workers
Receptor Age: Adult

Exposure	Chemical	Medium	Medium	Roule	Route	EPC	hteka	Intake	Reference	Reference	Reference	Reference	Heaterd
Rould	of Potential	EPC	EPC	EPC	EPC	Selected	(Non-Cancer)	(Non-Cancer)	Dose (2)	Dose Units	Concentration	Concentration	Quotient
	Concern	Value	Units	Value	Units	for Hazzard		Units		1	\	Units	,
						Calculation (1)							
postion	1.1 Dichloroethene	390000	uglig	3900ob	ug/kg	w w	1.06-004	mg/kg-dey	3 06-002	mg/kg-clay	N/A	N/A	6.4E-003
	Behap(b)flutrenthene	3149	ug/kg	3149	ug/kg	M 1	1 56-006	mg/kg-day	-	mg/kg-day	N/A	N/A	-
	Betup(a)pytene	4713	ugfkg	4713	ugAtg	M	2.36-008	mg/kg-day	-	mg/kg-day	N/A	N/A	-
	Methoxychibr	760000	ug/kg	760000	ugftg	M	3.7E-004	mg/kg-day	5.0E-003	mg/kg-day	N/A	N/A	7.4E-002
	Aroclar-1242	10638	ug/kg	10538	ughts	M	5 26-008	mg/kg-day	_	mg/kg-day	NVA	N/A	-
	Arector-1248	74000	ugfkg	74000	ugfig	M	3 66-006	mg/kg-day	-	mg/kg-day	NA	NA	-
	Arsenic	828	mg/kg	828	mg/kg	M)	4 1E-004	mg/kg-day	3.0E-004	mg/kg-day	N/A	N/A	1.4E+000
	Theflum	1.8	mg/kg	18	mg/kg	M	8 88-007	mg/kg-day	7 05-005	mg/kg-day	N/A	N/A	1 3E-007
	(To							l	l	İ	l		1 4E+000
rmal	1,2-Dichloroethane	390000	ugfkg	390000	ugfig	M	2.26-002	mg/kg-day	3.0€-002	mg/kg-day	NA	NA.	7.4E-001
	Benac(b)flubranthene	3149	ugfkg	3149	ugfig	M 1	2 38-006	mg/kg-day	-	ing/kg-day	N/A	N/A	\ -
	Bengo(a)pytene	4713	ug/kg	4713	ughg	M	3 58-006	mg/kg-day	-	mg/kg-day	N/A	N/A	-
	Methoxychlor	760000	ugfkg	760000	ug/kg	M	4 35-003	mg/kg-day	5.0E-003	mg/kg-day	N/A	NA	8.7E-001
	Araciar-1242	10536	ugfkg	10538	ugftg	M	8 4E-005	mgfig-day	-	mg/kg-day	N/A	NYA	-
	Aroctor-1248	74000	ugfkg	74000	ugAgg	M	5.96-004	mg/kg-day	-	mg/kg-day	N/A	N/A	-
	Arsenic	828	mg/kg	828	mg/kg	M	1.46-003	mg/kg-day	3.05-004	mg/kg-day	N/A	N/A	4 7E+00(
	Thellium (To	1.8	mg/kg	1.8	mg/kg	M	1 06-008	mg/kg-day	7 08-005	mg/kg-day	N/A	N/A	1 5E-002

- (1) Medium-Specific (M) or Route-Specifid (R) EPC selected for hazard calculation
- (2) Chronic

--- Reference Dose not available, therefore Hexard Quotient not calculated

N/A - Not Applicable

TABLE 7.6b.CT CALCULATION OF NON-CANCER HAZARDS CENTRAL TENDENCY EXPOSURE HORSESHOE ROAD COMPLEX SITE. SAYREVILLE, NEW JERSEY

Scarario Timeliame: Fulure
Medium: Soil
Exposure Medium: Subsurface Soil
Exposure Point: AOC 2 - ADC
Receptor Population: Site Workers
Receptor Age: Adult

Exposure	Chemical	Medum	Medium	Route	Route	EPC	irtake	trteke	Reference	Reference	Reference	Reference	Hezerd
Route	of Polerdial	EPC	EPC	EPC	EPC	Selected	(Non-Cancer)	(Non-Cencer)	Dose (2)	Dose Urits	Concentration	Concertration	Quotien
	Concern	Velue	Urits	Value	Urits	for Hazard		Units				Urits	
		}			}	Calculation (1)		1		1	i		
gestan	1,2-Didilaroshere	28073	l uples	28073	l up/kg		5.2E-008	mg/kg-day	3.0E-002	mg/kg-day	N/A	N/A	1.7E-004
	Benzo(b)Bucrerthene	490	up/kg	490	upkg	M	9.8E-008	mg/kg-day	-	mg/kg-day	N/A	N/A	_
	Benzo(a)pyrene	563	Lightig	563	upleg	M	1.1E-007	mg/kg-day	-	mg/kg-day	N/A	N/A	_
	Methoxychiar	64833	upleg	64833	ug/kg	M	1.3E-005	mg/kg-day	5.0€-003	mg/kg-day	N/A	N/A	2.6E-00
	Aradar-1242	76.8	upto	76.6	ugAg	M	1.5E-008	mg/kg-day	-	mg/kg-day	N/A	N/A	_
	Arodor-1248	7261	uplig	7261	up/kg	M	1.5E-006	mg/kg-day	_	mg/kg-day	N/A	N/A	_
	Arseric	21	mg/kg	21	mg/kg	M	4.2E-008	mg/kg-day	3.0E-004	mg/kg-day	N/A	N/A	1.4E-00
	Thellum	1	mg/kg	1	mg/kg	M	2.0E-007	mg/kg-day	7.0E-005	mg/kg-day	N/A	N/A	2.9E-00
	(Tota						Ħ				i	:	2.0E-00
rmal	1.2-Dictionosthere	20073	upleg	26073	ugAg	M	9.4E-004	mg/kg-day	3.0E-002	mg/kg-day	N/A	N/A	3.1E-00
	Benzo(b)fluorenthene	490	ug/kg	490	ug/kg	M	2.3E-006	mg/kg-day	i -	mg/kg-day) N/A	N/A	_
	Berzo(s)pyrens	563	LugAng	563	ug/kg	M	2.6E-006	mg/kg-day	-	mg/kg-day	N/A	N/A	_
	Methoxyddor	64833	ugleg	64833	Lightg	М	2.3E-004	mg/kg-day	5.0E-003	mg/kg-dey	N/A	N/A	4.7E-002
	Arodor-1242	78.8	ug/kg	76.6	ug/kg	M	3.9E-007	mg/kg-day	_	mg/kg-dey	N/A	N/A	_
	Aroder-1248	7261	ug/kg	7261	ug/kg	M	3.7E-005	mg/kg-day	-	mg/kg-day	N/A	N/A	_
	Arseric	21	mg/kg	21	mg/kg	M	2.3E-005	mg/kg-day	3.0E-004	mg/kg-dey	N/A	N/A	7.6E-00
	TheBurn	1	mg/kg	1	mg/kg	M	3.6E-007	mg/kg-day	7.0E-005	mg/kg-day	N/A	N/A	5.1E-00

- (1) Medium-Specific (M) or Route-Specific (R) EPC selected for hezard calculation.
- (2) Chranic.
- -- Reference Dose not available, therefore Hazard Quotient not calculated. N/A Not Applicable.

TABLE 7.6b.RME CALCULATION OF NON-CANCER HAZARDS REASONABLE MAXIMUM EXPOSURE HORSESHOE ROAD COMPLEX SITE, SAYREVILLE, NEW JERSEY

Scinario Timelhame: Future Medium: Soll Exposure Medium: Subsurtace Soll Exposure Point: AOC 3 - 8PD Receptor Population: Site Workers Receptor Age: Adult

_	J	1					١						l
Exposure	Chemical	Medium	Medium	Route	Route	EPC	Intales	Intake	Reference	Reference	Reference	Reference	Heamrd
Route	of Potential	EPC Value	EPC Unite	EPC	EPC Units	Selected for Hexard	(Non-Cancer)	(Non-Cancer) Units	Dose (2)	Dose Units	Concentration	Concentration	Quotien
	Concern	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	Units	Value	Unite	Celculation (1)		Unite				Units	
estion			Nemana :	1 1 1 1 1 1 1 1 1 1		1		1 -1 -11-1	, ** * 2 *				1
	Beran(s)pyrane	93	ughg	93	ug/kg	M	4.6E-006	mg/kg-day	_	mg/kg-day	N/A	N/A	-
	Aroclor-1254	164	ugftg	164	ug/kg	M	8.0E-008	mg/kg-day	2.0E-006	mg/kg-day	N/A	N/A	4.0E-00
	Arocior-1280	178	upfqu	176	ugfkg	M	8.6E-008	mg/kg-day	-	mg/kg-day	N/A	N/A	-
	Methoxychior	18000	ugfig	18000	ugArg	M	8 8E-006	mg/kg-day	5.0E-003	mg/kg-day	N/A	N/A	1.8E-00
	Akeninum	9062	mg/kg	9082	mg/kg	M	4.5E-003	mg/kg-day	1.0E+000	mg/kg-day	N/A) N/A	4.5E-00
	Antimony	0.83	mg/hg	0.83	mg/kg	M	4 1E-007	mg/kg-day	4.0E-004	mg/kg-day	N/A	N/A	1.0E-00
	Areania	29	mgfig	29	mg/kg	M	1.4E-005	mg/kg-day	3.0E-004	mg/kg-day	NYA .	N/A	4.7E-00
	Cadmium	0.67	mgfig	0.67	mgArg	M	3.3E-007	mg/kg-day	1.0E-003	mg/kg-day	N/A	N/A	3.3E-00
	Manganese	197	mg/kg	197	mgfkg	M	9.7E-005	mg/kg-day	2.4E-002	mg/kg-day	N/A	NYA	4.0E-00
	TheBurn	1.2	morte	1.2	mgAcg	M	5.9E-007	mg/kg-day	7.0E-005	mg/kg-day) N/A	NVA .	8.46-00
	Vanedum	33	mofig	33	mgArg	M	1.6E-005	mg/kg-day	7.0E-003	mg/kg-day	N/A	NYA	2.3E-00
	(†al	=1)	. .									1	7.4E-00
mei	[1			1			1]
	Benizo(s)pyrane	93	ugitg	93	ug/kg	M	6.9E-007	mg/kg-day	-	mg/kg-dwy	N/A	N/A	-
	Arodor-1254	164	ugfig	164	naya	M	1.3E-006	mg/kg-day	2.0E-005	mg/kg-day	N/A	N/A	0.5E-00
	Aroclor-1260	178	ugileg	176	ugfig	M	1.4E-008	mg/kg-day	-	mg/kg-day	N/A	N/A	-
	Methoxyohior	18000	ughts	18000	nayes	M	1.0E-004	mg/kg-day	6.0E-003	mg/kg-day	NA	NA	2.1E-00
	Aluminum	9062	mg/ng	9082	mgfkg	M	5.2E-003	mg/kg-day	1.0E+000	mg/kg-day	N/A	N/A	5.2E-00
	Antimony	0.83	mgfig	0.83	mgfkg	M	4.7E-007	mg/kg-day	4.0E-004	mg/kg-day	N/A	N/A	1.2E-00
	Areanic	29	mone	29	mg/kg	M	5.0E-005	mg/kg-day	3.0E-004	mg/kg-day	N/A	N/A	1.7E-00
	Cadmium	0.67	mg/kg	0.67	mgfeg	M	3.8E-008	mg/kg-day	1.0E-003	mg/kg-day	N/A	N/A	3.8E-00
	Manganese	197	mg/kg	197	mane	M	1.1E-004	mg/kg-day	2.4E-002	mg/kg-day	NA	N/A	4.7E-00
	Theilium	1.2	mgNg	1,2	mg/kg	M	6.8E-007	mg/kg-day	7.0E-005	mg/kg-day	N/A	N/A	9.8E-0
	Venedium	33	mg/kg	33	mg/leg	M	1.9E-005	mg/kg-day	7.0E-003	mgfig-day	N/A	N/A	2.7E-0

⁽¹⁾ Medium-Specific (M) or Route-Specific (R) EPC selected for hearrd calculation.

⁽²⁾ Chronic.

⁻⁻ Reference Dose not available, therefore Hejard Qualitest not calculated. N/A - Not Applicable.

TABLE 7.66 RME CALCULATION OF NON-CANCER HAZARDS REASONABLE MAXIMUM EXPOSURE HORSESHOE ROAD COMPLEX SITE, SAYREVILLE, NEW JERSEY

Scenario Timeframe Future

Medum: Soll

Exposure Medium: Test Pit Soil Exposure Point: AOC 3 - SPD Receptor Population: Site Workers Receptor Age: Adult

Exposure Route	Chemical of Potential	Medum EPC	Medium EPC	Rbute EPC	Route EPC	EPC Selected	Intake (Non-Cancer)	Intake (Non-Cancer)	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration	Hezerd Quotieni
	Concern	Value	Units	Value	Units	for Hezerd		Units		1	!	Units	ì
						Calculation (1)					.		
estion			- <u>tutot</u> rum no-r					· · · · · · · · · · · · · · · · · · ·			Francisco de la constanta de l		ini na n wa wa
	Hexachloroethane	10,201,148	ug/kg	10,201,148	ug/kg	M	5.0E-003	mg/kg-day	1.0E-003	mg/kg-day	N/A	N/A	5.0E+00
	Benzo(a)pyrene	4700	ug/kg	4700	ug/kg	M	2 3E-008	mg/kg-day	-	rng/kg-day	N/A	N/A	
1	Dibenzo(é,h)enthracene	920	ug/kg	920	ug/kg	M	4 5E-007	mg/kg-day	-	mg/kg-day	N/A	N/A	
	Aroclor-1248	21000	ug/kg	21000	ugikg	M	1.0E-005	mg/kg-day		mg/kg-day	N/A	N/A	_
	Aroctor-1254	8000	ug/kg	6000	ug/kg	M	2 9E-008	mg/kg-day	2.0E-005	mg/kg-day	N/A	N/A	1.5E-001
	Arsenic	77	mg/kg	77	mgfkg	M i	3 8E-005	mg/kg-day	3.0E-004	mg/kg-day	N/A	N/A	1.3E-001
	Copper	32300	mgAcg	32300	mg/kg	M	1.66-002	mg/kg-day	4.0E-002	mg/kg-day	N/A	N/A	4 0E-001
	(Totel)					l				L			5.7E+00
TTOMAN							ĺ						
	Hexachloroethane	10,201,148	ug/kg	10,201,148	ug/kg	M	5 8E-002	mg/kg-day	1.0E-003	mg/kg-day	N/A	NA	5 8E+00
	Benzo(s)pyrene	4700	ug/kg	4700	ugftg	M	3.5E-005	mg/kg-day	•-	mg/kg-day	N/A	N/A	-
	Olbenzo(s,h)enthracene	920	ug/kg	920	ugfig	M	6 8E-008	mg/kg-day	-	mg/kg-day	N/A	NA	-
	Arodor-1248	21000	ug/kg	21000	ugfkg	, M	1 7E-004	mg/kg-day		mg/kg-day	N/A	N/A	
	Arodor-1254	6000	ugfkg	6000	ugfkg	M	4.8E-005	mg/kg-day	2.0E-005	mg/kg-day	N/A	N/A	2 4E+00
	Areenic	77	mg/kg	[77]	mg/kg	M	1 35-004	mg/kg-day	3 0E-004	mg/kg-day	N/A	NYA	4 4E-00
	Copper	32300	mg/kg	32300	mg/kg	M	1 8E-002	mg/kg-day	4.0E-002	mg/kg-day	N/A	N/A	4 6E-00

(1) Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation

(2) Chronic.

--- Reference Dose not available, therefore Hazard Quotient not calculated.

N/A - Not Applicable

TABLE 7.66.CT CALCULATION OF NON-CANCER HAZARDS CENTRAL TENDENCY EXPOSURE HORSESHOE ROAD COMPLEX SITE, SAYREVILLE, NEW JERSEY

Scranto Timetrane: Future
Medum: Sali
Exposure Medum: Test Pit Sali
Exposure Point: ACC 3 - SPD
Receptor Populator: Site Warters

	Receptor Population: Site World Receptor Age: Adult		- 125			g grand tipo tanggan ang manang m		_					
Esposure	Chemical	Medium	Medum	Route	Route	EPC	Intake	Irtoko	Reference	Reference	Reference	Reference	Hazard
Route	of Poterfiel	EPC	EPC	EPC	EPC	Selected	(Non-Cencer)	(Non-Cancer)	Dose (2)	Dose Units	Concentration	Concertration	Quotien
	Concern	Velus	Urits	Velus	Urits	for Hazard		Units				Urits	
						Calculation (1)							i
alon .	· · · · · · · · · · · · · · · · · · ·				l		reconstitution		V . Promest		** 1.	e arresini	1
	Hexachloroethene	1751	Lightig	1751	ugaleg	M	3.5E-007	mg/kg-day	1.0E-003	mg/kg-day	N/A	N/A	3.5E-00
	Berzo(e)pyrene	2000	Lightig	2000	ug/kg	M	4.0E-007	mg/kg-day	-	mg/kg-day	N/A	N/A	-
	Cibergo(s.h)er@yecene	820	ugArg	920	ugAg	M	1.8E-007	mg/kg-dey	-	mg/kg-day	N/A	N/A	-
	Arodor-1248	3331	Lightig	3331	upkg	M	6.7E-007	mg/kg-day	-	mg/kg-day	N/A	N/A	-
	Arodor-1254	764	ug/kg	784	upleg	M	1.5E-007	mg/kg-day	2.0E-005	mg/kg-day	N/A	N/A	7.6E-00
	Arseric	21.5	mg/kg	21.5	mg/kg	M	4.3E-008	mg/kg-day	3.0E-004	mg/kg-day	N/A	N/A	1.4E-00
	Copper	3502	mg/kg	3502	mg/kg	M	7.0E-004	mg/kg-day	4.0E-002	mg/kg-day	N/A	N/A	1.8E-00
	(Tota	0)	. 1						l	1		l <u>.</u>	4.0E-00
mai					_				Į.		ļ		
	Hemoricroethene	1751	ugAg	1751	up/rp	M	6.3E-006	mg/kg-day	1.0E-003	mg/kg-day	N/A	N/A	6.3E-00
	Berzo(a)pyrene	2000	ugArg	2000	up/kg	M	9.4E-006	mg/kg-day	-	mg/kg-day	N/A	N/A	-
	Dibenzo(a,h)arthracene	920	ug/kg	920	upAq	M	4.3E-006	mg/kg-day	-	mg/kg-day	N/A	N/A	-
	Arodor-1248	3331	ugAg	3331	up/ep	M	1.7E-005	mg/kg-dey	-	mg/kg-day	N/A	N/A	-
	Arodor-1254	784	ug/kg	764	ug/kg	M	3.9E-006	mg/kg-day	2.0E-005	mg/kg-day	N/A	N/A	1.9E-00
	Arearic	21.5	mgAg	21.5	mg/kg	M	2.3E-005	mg/kg-day	3.0E-004	mg/kg-day	N/A	N/A	7.7E-00
	Copper (Total	3502 I)	mg/kg	3502	mg/kg	M	1.3E-003	mg/kg-day	4.0E-002	mg/kg-day	N/A	N/A	3.2E-00 3.1E-00
	e flate com tem, pur ques statistica es en		**	**	•	•	" · · · · · · · · · · · · · · · · · · ·	•••	•	Total Hazard Inde	x Across All Exposur	e Routes/Petiweys	3.5E-00

- (1) Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.
- (2) Civaric.

--- Reference Dose not available, therefore Hazard Quotient not calculated. N/A - Not Applicable.

TABLE 7 65 RME CALCULATION OF NON-CANCER HAZARDS REASONABLE MAXIMUM EXPOSURE HORSESHOE ROAD COMPLEX SITE. SAYREVILLE. NEW JERSEY

Scenario Timekame Future
Medum Soll
Exposure Medum Bubsurface Soll
Exposure Point AOC 4 - ARC
Receptor Population Site Workers
Receptor Age Adul

Exposure	Chemical	Medium	Medium	Route	Route	EPC	Intake	intake	Reference	Reference	Reference	Reference	Hazard
Route	of Potential	EPC	EPC	EPC	EPC	Selected	(Non-Cancer)	(Non-Cancer)	Dose (2)	Dose Units	Concentration	Concentration	Quotien
	Contern	Value	Units	Value	Units	for Hitzard Calculation (1)		Units				Units	
pation	Tetrachioroethene	19252	ugfkg	19252	ugfkg	W	9 4E-006	mg/kg-day	i 0E-002	mg/kg-day	N/A	NVA	9 4E-00
	Chlorobenzene	29736	ug/kg	29736	ugfkg	M	1 5E-005	mg/kg-day	2.0E-002	mg/kg-day	N/A	N/A	7 3E-00
	Benzo(a)enthracene	793	ug/kg	793	ugfkg	M	3.9E-007	mg/kg-day	-	mg/kg-day	N/A	N/A	-
	Benzo(b)fluoranthene	830	ug/kg	830	ug/kg	M	4.1E-007	mg/kg-day	-	mg/kg-day	N/A	N/A	
	Benzo(a)pyrene	767	ug/kg	767	ugfkg	M	3.8E-007	mg/kg-day	-	mg/kg-day	N/A	N/A	-
	Indeno(1,2,3-cd)pyrene	893	ugfkg	693	ugfkg	M	3 4E-007	mg/kg-day	_	mg/kg-day	N/A	N/A	-
	1,2,4-Trichlorobenzene	112687	ug/kg	112687	ugfkg	M	5 5E-005	mg/kg-day	1.0E-002	mg/kg-day	N/A	N/A	5 5E-00
	Aktrin	5.7	ug/kg	5.7	ug/kg	M	2 8E-009	mg/kg-day	3.0E-005	mg/kg-day	N/A	N/A	9 3E-00
	Aroctor-1248	149	ug/kg	149	ugfkg	M	7 3E-008	mg/kg-day		mg/kg-day	N/A	N/A	-
	Aroclor-1254	56	ug/kg	56	ug/kg	M	2 7E-008	mg/kg-day	2.0E-005	mg/kg-day	NVA	N/A	1.4E-00
	Aluminum	13018	mg/kg	13018	mg/kg	M	6 4E-003	mg/kg-day	1 0€+000	mg/kg-day	N/A	N/A	6 4E-00
	Antimony	2.1	mg/kg	2.1	mg/kg	M	1 0E-006	mg/kg-day	4.0E-004	mg/kg-day	NYA	N/A	2 8E-00
	Arsenic	13	mg/kg	13	mg/kg	M (6 4E-006	mg/kg-day	3.0E-004	mg/kg-day	N/A	N/A	2 1E-00
	Manganese	133	mg/kg	133	mg/kg	M	6 5E-005	mg/kg-day	2.4E-002	mg/kg-day	NA	N/A	2 7E-00
	Thellium	1.1	mg/kg	1.1	mg/kg	M	5 4E-007	mg/kg-day	7.0E-005	mg/kg-day	N/A	NVA	7 7E-00
	Vanadum	dal) 43	mg/kg	43	mg/kg	M	2 1E-005	mg/kg-day	7.0È-003	mg/kg-day	N/A	NVA	3.0E-00
mei	Tetrachloroethene	19252	ug/kg	19252	ug/kg	· · · · · · · · · · · · · · · · · · ·	1 1E-003	mg/kg-de v	1 0E-002	mg/kg-day	NVA	- NVA	1 1E 00
	Chlorobenzane	29738	ugkg	29736	ug/kg	M	1 7E-003	mg/kg-day	20€-002	mg/kg-day	NVA	NVA	8 5E-00
	Benzo(a)enthracene	793	ug/kg	793	ughq	m	5.9E-006	mg/kg-day	-	mg/kg-day	NVA	N/A	8 35-00
	Benzotbiluoranthene	830	ug/kg	830	ug/kg	m	6 2E-006	mg/kg-day		mg/kg-day	NA	N/A	
	Bengo(a)pyrene	767	uafka	767	ug/kg	,	5 7E-006	mg/kg-day	_	mg/kg-day	NVA	N/A	
	Indeno(1,2,3-cd)pyrene	693	ugAca	693	ug/kg		5 1E-008	mg/kg-day	_	mg/kg-day	N/A	N/A	
	1.2.4-Trichlorobenzane	112667	ug/kg	112667	ug/kg	m	6 4E-004	mg/kg-day	1 0E-002	mg/kg-day	N/A	N/A	6 4E-00
	Aldrin	5.7	ug/kg	5.7	ug/kg	"	3 2E-008	mg/kg-day	3 0E-005	mg/kg-day	N/A	N/A	1.1E-00
	Arocior-1248	149	ug/kg	149	ug/kg	m	1 2E-008	mg/kg-day	-	mg/kg-day	NA	N/A	1.12-00
	Aroctor-1254	56	ug/kg	56	ug/kg	l m	4 5E-007	mg/kg-day	2.0E-005	mg/kg-day	N/A	N/A	2 2E-00
	Aluminum	13018	marka	13018	marka	,	7.4E-003	mg/kg-day	1.0E+000	mg/kg-day	N/A	NA	7 4E-00
	Antimony	2.1	marka	2.1	mg/kg	ı m	1.2E-008	mg/kg-day	4.0E-004	mg/kg-day	NA	NA	3 0E-0
	Arsenic	13	marka	13	mg/kg	M	2.2E-005	mg/kg-day	3.0E-004	mg/kg-day	N/A	NA	7 4E-00
	Manganese	133	marka	133	marka	M	7 6E-005	mg/kg-day	2 4E-002	mg/kg-day	N/A	N/A	3 2E-00
	Thellum	11	marka	11	mg/kg	M	6 3E-007	mg/kg-day	7.0E-005	mg/kg-day	NA	NA	9 DE-00
	Vanedum	43	marka	43	mg/kg	M	2.5E-005	mg/kg-day	7 0E-003	mg/kg-day	N/A	N/A	3 5E-00
	1	oten		1		""			. 52.463	,			3 8É-00

⁽¹⁾ Medum-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

⁽²⁾ Chronic.

⁻⁻⁻ Reference Dose not available, therefore Hazard Quotient not calculated.

N/A - Not Applicable.

TABLE 7.7a.RME CALCULATION OF NON-CANCER HAZARDS REASONABLE MAXIMUM EXPOSURE HORSESHOE ROAD COMPLEX SITE, SAYREVILLE, NEW JERSEY

Scenario Timeframe: Future

Medium: Soil

Exposuré Medium: Surface Soil

Exposure Point. AOC 1 - HRDD Receptor Population: Construction Workers

Receptor Age Adult

Extraction	Chemical	Medum	Medium	Route	Route	EPC	intake	Intake	Reference	Reference	Reference	Reference	Hezerd
Route	of Potential	EPC	EPC	EPC	EPC	Selected	(Non-Cancer)	(Non-Cancer)	Dose (2)	Dose Units	Concentration	Concentration	Quotient
	Concern	Value	Units	Value	Units	for Hazard		Units			ļ	Units	1
						Calculation (1)							
gestion	Dieldin	120	ug/kg	120	ughg	M. M.	1.4E-007	mg/kg-day	5.0E-005	mg/kg-day	N/A	N/A	2.0E-003
	Arocior-1248	9600	ugfing	9500	ugfig	M	1.1E-005	mgfkg-day		mg/kg-day	N/A	N/A) -
	Aroctor-1254	850	ug/kg	850	ug/kg	M)	1 0E-008	mg/kg-day	2 0E-005	mg/kg-day	N/A	N/A	5.1E-002
	Aradar-1280	720	ugfing	720	ug/kg	M	8 6E-007	mg/kg-day	-	mg/kg-day	N/A	NYA	
	Auminum	14250	mg/kg	14250	mg/kg	M	1 7E-002	mg/kg-day	1.0E+000	mg/kg-day	N/A	N/A	1 7E-002
	Antimony	3.4	mg/kg	3.4	mg/kg	M	4.1E-008	mg/kg-day	4.0E-004	mg/kg-day	N/A	N/A	1 0E-002
	Arsenic	63	mg/kg	53	mg/kg	M	6 4E-005	mg/kip-day	3 0E-004	mg/kg-day	N/A	N/A	2.1E-001
	Cadmium	4.5	mg/kg	4.5	mg/kg	M	5 4E-006	mg/kg-day	1.0E-003	mg/kg-day	N/A	N/A	5.4E-003
	Copper	433	mg/kg	433	mgAg	M	5.2E-004	mg/kg-day	4 OE-002	mg/kg-tlay	N/A	NA.	1 3E-00;
	Manganese	420	mg/fep	420	mg/kg	M	5 0E-004	mg/kig-day	2 4E-002	mg/kg-day	N/A	N/A	2 1E-002
	Nickel	108	mg/kg	108	mg/kg	M	1 3E-004	mg/kip-day	2 OE-002	mg/kg-day	N/A	N/A	6 5E-003
	Silver	30	mg/kg	30	mg/kg	M	3 6E-005	mg/kg-day	5 0E-003	mg/kg-day	N/A	N/A	7.2E-003
	TheBum	1	mg/kg	1	mgfkg	M)	1.2E-008	mg/kg-day	7.0E-005	mg/kg-day) N/A	N/A	1.7E-002
	Vanedium	84	mg/kg	54	mg/kg	M	7.7E-005	mg/kg-day	7.0E-003	mg/kg-day	N/A	N/A	1.1E-002
	(Total)									<u> </u>	l		3 7E-001
rmel	Dieldrin	120	ug/kg	120	ug/kg	M	1 9E-007	mg/kg-day	5 0E-005	mg/kg-thry	NVA	N/A	3 8E-003
	Aroclor-1248	9600	ug/kg	9500	ugAg	M	2.1E-005	mg/kg-day	-	mg/kg-tlay	N/A	N/A	-
	Aroctor-1254	850	ug/kg	850	ug/kg	M	1 9E-006	mg/kg-day	2.0E-005	mg/kg-day	N/A	N/A	9.5E-002
	Aroclor-1260	720	ug/kg	720	ug/kg	M	1 8E-008	mg/ktp-clay	-	mg/kg-day	N/A	N/A	
	Aluminum	14250	mg/kg	14250	mg/kg	M	2 3E-003	mg/kg-day	1.0E+000	ing/kg-day	NA	N/A	2 3E-003
	Antimony	34	mgAtg	3.4	mg/kg	M	5.4E-007	mg/kg-day	4.0E-004	mg/kg-day	N/A	N/A	1.4E-003
	Arsenic	53	mg/kg	53	mg/kg	M	2 5E-005	mg/kg-day	3 0E-004	mg/kg-day	N/A	N/A	8.5E-002
	Cadmium	45	mg/kg	4.5	mg/kg	M	7 2E-006	mg/kg-day	1 0E-003	mg/kg-day	N/A	N/A	7.2E-005
	Copper	433	mg/kg	433	mg/kg	M	6 9E-005	mg/kg-day	4.0E-002	mg/kg-day	NA	N/A	1 7E-003
	Manganese	420	mg/kg	420	mg/kg	M	6 7E-005	mg/kg-day	2.4E-002	mg/kg-day	N/A	N/A	2.8E-00:
	Nickel	108	mg/kg	108	mg/kg	M	1.7E-005	mg/kg-day	2.0E-002	mg/kg-day	N/A	N/A	8.8E-004
	Silver	30	mg/kg	30	mg/kg	M	4 8E-006	mg/kg-day	5 0E-003	mg/kg-day	N/A	N/A	9.66-004
	Thellum	1	mg/kg	1	mg/kg	M	1.6E-007	mg/kg-day	7.0E-005	mg/kg-day	N/A	N/A	2 3E-003
	Vanadium	84	mg/kg	64	mg/kg	M	1.0E-005	mg/kg-day	7 0E-003	mg/kg-day	N/A	N/A	1.5E-00:
	(Total)		1 1		}			1	L	l		I	2 0E-00

(1) Medium-Specific (M) or Route-Specific (R) EPC selected for hearrd calculation.

(2) Chronic.

 \sim - Reference Dose not available, therefore Hazard Quotient not calculated

N/A - Not Applicable

TABLE 7.7a RME CALCULATION OF NON-CANCER HAZARDS REASONABLE MAXIMUM EXPOSURE HORSESHOE ROAD COMPLEX SITE, SAYREVILLE, NEW JERSEY

Scenario Timeframe Future Medium: Soil Exposure Medium: Surface Soil Exposure Point: AOC 2 - ADC Receptor Population Construction Workers

Exposure	Chemical	Medium	Medium	Route	Route	EPC	intake	Intake	Reference	Reference	Reference	Reference	Hezerd
Route	of Potential	EPC	EPC	EPC	EPC	Selected	(Non-Cancer)	(Non-Cancer)	Dose (2)	Dose Units	Concentration	Concentration	Quotien
	Concern	Value	Units	Value	Units	for Hezerd		Units		1		Units	l
						Calculation (1)							
police	Benzo(a)enthracene	21000	ug/kg	21000	ug/kg	- M	2 šE-00š	mg/kg-day		mg/kg-day	N/A	N/A	
	Benzo(b)fluoranthene	30000	ug/kg	30000	ug/kg	M	3.6E-005	mg/kg-day	-	mg/kg-day	N/A	N/A	-
	Benzo(s)pyrene	20000	ug/kg	20000	ugfkg	M	2 4E-005	mg/kg-day	-	mg/kg-day	NYA	N/A	
	Indeno(1,2,3-cd)pyrane	12000	ugkg	12000	ug/kg	M)	1 4E-005	mg/kg-day	-	mg/kg-day	N/A	N/A	-
	Dibenzo(e,h)anthrecene	2300	ug/kg	2300	ugfkg	M I	2.8E-006	mg/kg-day		mg/kg-day	N/A	N/A	
	Aldrin	400	ug/kg	400	ugfkg	M	4.8E-007	mg/kg-day	3.0E-005	mg/kg-day	NA	N/A	1.8E-00
	Diekhin	740	ug/kg	740	naye	M	8 9E-007	ftgftg-day	5.0E-005	mg/kg-dwy	NA	NA	1 8E-00
	Methoxychior	980000	ug/kg	980000	ugfkg	M	1.2E-003	rhg/kg-clay	5.0E-003	mg/kg-day	NYA	N/A	2 4E-00
	Araclor-1248	34000	ug/kg	34000	ug/kg	M .	4.1E-005	rhg/kg-day	-	mg/kg-day	N/A	N/A	-
	Aroclor-1260	2500	ugfkg	2500	ugftg	l M i	3 0E-006	mg/kg-day	-	mg/kg-day	N/A	N/A	-
	2,3,7,8-TCDD equiv.	0 306	ug/kg	0.308	ugfkg	M	3.7E-010	mg/kg-day	-	mg/kg-day	N/A	N/A	-
	Antimony	32	mg/kg	32	mg/kg	M	3.8E-005	mg/kg-day	4 0E-004	mg/kg-day	N/A	N/A	9.6E-00
	Arsenic	3640	mg/kg	3640	mg/kg	M	4.4E-003	mg/kg-day	3.0E-004	mg/kg-day	N/A	N/A	1.5E+0
	(Tot			i			l			·	l	}	1.5E+0
mel	Benzo(a)enthracene	21000	ughg	21000	ugfkg	M	4 4E-005	mg/kg-day	-	mg/kg-day	N/A	N/A	-
	Benzi(b)fluoranthene	30000	ug/kg	30000	ugfkg	M	6 2E-005	mg/kg-day	-	mg/kg-dwy	N/A	N/A	-
	Benzo(s)pyrene	20000	ug/kg	20000	ug/kg	M	4.2E-005	rhg/kg-day	-	mg/kg-day	N/A	N/A	-
	Indeno(1,2,3-cd)pyrene	12000	ug/kg	12000	ug/kg	м	2 5E-005	mg/kg-day	-	mg/kg-day	N/A	N/A	-
	Dibenzo(s,h)enthracene	2300	ughg	2300	ug/kg	M	4.8E-006	ringflug-day	~	mg/kg-day	N/A	N/A	-
	Akhn	400	ug/kg	400	ugfkg	M	6.4E-007	mg/kg-day	3 0E-005	mg/kg-day	N/A	N/A	2.1E-00
	Dieldin	740	ugfkg	740	ugfkg	M	1.2E-006	mg/kg-day	5.0E-005	mg/kg-day	N/A	N/A	2 4E-00
	Methoxychior	980000	ugfug	980000	ugfkg	M	2 2E-003	mg/kg-day	5 0€-003	mg/kg-day	N/A	N/A	4 4E-00
	Aroclor-1248	34000	ugfkg	34000	ugfkg	M	7 6E-005	mg/kg-day	-	mg/kg-day	N/A	N/A	-
	Araclor-1260	2500	ugfkg	2500	ugfkg	, w	4 0E-006	mg/kg-day		mg/kg-day	N/A	N/A	-
	2,3,7.8-TCDD equiv.	0.306	ugfkg	0.308	ug/kg	M	1.5E-010	mg/kg-day	-	mg/kg-day	N/A	N/A	-
	Antimony	32	mg/kg	32	mg/kg	M	5.1E-008	mg/kg-day	4 0E-004	mg/kg-day	N/A	N/A	1.3E-0
	Arsenic (Tat	3640	mg/kg	3640	mg/kg	M	1.7E-003	mg/kg-day	3.0€-004	mg/kg-day	N/A	N/A	5 8E+0

⁽¹⁾ Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation

⁽²⁾ Chronic

⁻⁻⁻ Reference Dose not available, therefore Hazard Quotient not calculated.

N/A - Not Applicable

TABLE 7.7a CT CALCULATION OF NON-CANCER HAZARDS CENTRAL TENDENCY EXPOSURE HORSESHOE ROAD COMPLEX SITE, SATREVILLE, NEW JERSEY

Scenario Timeframe: Riture

Medum: Soll

Exposure Medium: Surface Soll

Exposure Point: AOC 2 - ADC

Receptor Population: Construction Workers

Receptor Age: Add

Exposure	Chemical	Medium	Medum	Route	Route	EPC	irtake	l'énice	Reference	Reference	Reference	Reference	Hezerd
Route	of Potential	EPC	EPC	EPC	EPC	Selected	(Non-Cancer)	(Non-Cencer)	Dose (2)	Dose Units	Concentration	Concentration	Quoter
	Concirn	Velue	Units	Value	Units	for Hezerd	'	Units				Urits	
						Calculation (1)				ļ	į		1
estan	Berzo(s)erêvecere	7557	uglag	4534	ug/leg	<u>u</u>	5.4E-008	mg/kg-day		mg/kg-day	N/A	I N/A	
	Berzo(b)fluoraráhene	7841	uptop	7841	ug/kg	M	9.4E-008	mg/kg-day	-	mg/kg-day	N/A	N/A	-
	Berzo(s)pyrens	5343	upto	5343	up/kp	M	6.4E-006	mg/kg-day	-	mg/kg-day	N/A	N/A	-
	Indeno(1,2,3-cd)pyrene	3251	ugikg	3251	ug/kg	M	3.9E-008	mg/kg-day	-	mg/kg-day	N/A	N/A	- 1
	Dibergo(a.h)arthracers	2532	uphy	2532	ug/kg	M	3.0E-008	mg/kg-day	-	mg/kg-day	N/A	N/A	- 1
	Aldrin	114	ugitg	114	up/kg	M	1.4E-007	mg/kg-day	3.0E-005	mg/kg-day	N/A	N/A	4 8E-00
	Dielotin	200	LigArg	200	LIG/NG	M	2.4E-007	mg/kg-day	5.0E-005	mg/kg-day	N/A	N/A	4.8E-00
	Methosychian	72823	uplep	72823	ug/kg	, M	8.7E-005	mg/kg-day	5.0E-003	mg/kg-day	N/A	N/A	1.7E-00
	Aradar-1248	7359	uplig	7350	ug/kg	M	8.8E-006	mg/kg-day	-	mg/kg-day	N/A	N/A	-
	Arodor-1280	1500	- Libyah	1500	ug/kg	M	1.8E-008	mg/kg-day) -	mg/kg-day	N/A	N/A	-
	2,3,7,8-TCDD equiv.	0.15	-rb/sb	0.15	ug/kg	M	1.8E-010	mg/kg-day	-	mg/kg-day	N/A	N/A	-
	Artimony	2.7	mg/kg	2.7	mg/kg	M	3.2E-006	mg/kg-day	4.0E-004	mg/kg-day	N/A	N/A	8.1E-00
	Arseric	46	mg/kg	48	mg/kg	M [5.5E-005	mg/kg-day	3.0E-004	mg/kg-day	N/A	N/A	1.8E-00
	(Tot										I	l	2.2E-00
mel	Bergo(s)er@vacene	4534	upto	4534	ug/kg	W	9 4E-008	mg/kg-dey	-	mg/kg-day	N/A	N/A	-
	Benzo(b)Ausrarahene	7841	ugAg	7841	UQ/kg	(M (1.6E-005	mg/kg-day	-	mg/kg-day	N/A	N/A	-
	Beneo(a)pyrene	5343	ug/kg	5343	ugAq	M	1.1E-005	mg/kg-dey	-	mg/kg-day	N/A	N/A	-
	Indeno(1,2,3-cd)pyrene	3251	ug/kg	3251	LigAtg	M	6.8E-006	mg/kg-dey	-	mg/kg-day	N/A	N/A	-
	Cibergo(a,h)er#racere	2532	upAg	2532	ug/kg	M	5.3E-006	mg/kg-day	-	mg/kg-day	N/A	N/A	-
	Aldrin	114	ugleg	114	upkg	M	1.8E-007	mg/kg-day	3.0E-005	mg/kg-day	N/A	N/A	6.1E-00
	Cleidin	200	ugkg	200	ug/ig	M	3.2E-007	mg/kg-day	5.0E-005	mg/kg-day	N/A	N/A	6.4E-00
	Methoxydrian	72823	ugleg	72623	ug/kg) M	1.6E-004	mg/kg-day	5.0E-003	mg/kg-day	N/A	N/A	3.3E-00
	Arador-1248	7350	ugkg	7359	ug/kg	M	1.6E-005	mg/kg-dey	-	mg/kg-day	N/A	N/A	-
	Arodor-1260	1500	uglig	1500	ugArg	M	2.4E-008	mg/kg-day	-	mg/kg-day	N/A	N/A	_
	2,3,7,8-TCDD eq.(v.	0.15	ugkg	0.15	upkg	M	7.2E-011	mg/kg-day		mg/kg-day	N/A	N/A	
	Artimony	2.7	marka	2.7	mp/kg	[M [4.3E-007	mg/kg-day	4.0E-004	mg/kg-day	N/A	N/A	1.1E-00
	Arseric (Tak	46	mp/kg	46	me/kg	, M	2.2E-005	mg/kg-day	3.0E-004	mg/kg-day	N/A	N/A	7.4E-00 1.2E-00

⁽¹⁾ Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

⁽²⁾ Chronic

⁻⁻ Reference Dose not available, therefore Hezard Quotient not calculated. N/A - Not Applicable.

TABLE 7.8.CT CALCULATION OF NON-CANCER HAZARDS CENTRAL TENDENCY EXPOSURE HORSESHOE ROAD COMPLEX SITE, SAYREVILLE, NEW JERSEY

|Scenario Timeframe: Raire Medium: Building Materials Exposure Medium: Building Materials Exposure Point: AOC 2 - ADC Receptor Population: Site Workers Receptor Age: Ad.8

Exposure	Chemical	Medum	Medium	Route	Route	EPC	Irtake	trtake	Reference	Defense			
Route	of Potential	EPC	EPC	EPC	EPC	Selected	(Non-Cencer)	(Non-Cencer)		Reference	Reference	Reference	Heze
	Concern	Value	Urite	Value	Urits	for Hezerd Calculation (1)	(Marca La)	Units	Dose (2)	Dose Units	Concentration	Concentration Units	Queli
ngestan	Bereo(s)er@rscore	468143	uplig	488145	uplig	ļ - u	3.0E-005	mg/kg-day	·	mg/kg-day	N/A	N/A	
	Benzo(b)illuorarihena	540675	ug/kg	540875	upleg	M	3.5E-005	mg/kg-day	_	mg/kg-day	N/A	N/A	-
	Benzo(a)pyrene	428620	ug/kg	426620	ug/kg	M	2.6E-005	mg/kg-day	l _	mp/kg-day	N/A	N/A	· -
	Indeno(1,2,3-od)pyrene	147910	ug/kg	147910	ug/kg	M	9.6E-006	mg/kg-day	_	mg/kg-day	N/A	N/A	-
	Dibenzo(a,h)antivacene	42436	up/kg	42438	ug/kg	M	2.8E-006	mg/kg-day	_	mg/kg-day	N/A	N/A	-
	Nephihalana	100966	upAg	100966	LEACO	M	6.6E-006	moke-day	2.0E-002	ma/kp-day	N/A	N/A	
	2-Mothyknophthelene	496113	up/kg	496113	Ug/kg	M	3.2E-005	mo/kg-day	2.0E-002	mp/kg-day	N/A	N/A	3.3E-
	Acenephthene	355888	up/kg	355888	ug/kg	M	2.3E-005	mp/kg-day	6.0E-002	mg/kg-day	N/A	N/A	1.6E-0
	Olbersolum	396113	upłą	396113	Lg/kg	M	2.6E-005	mg/kg-day	4.0E-003	mg/kg-day	N/A	N/A	3.9E-0
	Fluorene	583363	uplup	583363	Lightig	M	3.8E-005	mg/kg-day	4.0E-002	mg/kg-day	N/A	N/A N/A	8.5E-
	Plumer there	1833525	uphq	1833525	Lightg	w	1.2E-004	mg/kg-day	4.0E-002	mg/kg-day	N/A	N/A	9.5E-4
	Pyrene	1411478	ugAtg	1411478	LES/KO	M	9.2E-005	mg/kg-day	3.0E-002	mp/kg-day	N/A		3.0E-4
	Methoxychior	37714	upArp	37714	Lighte	M	2.5E-006	mg/kg-day	5.0E-003	mg/kg-day	N/A	N/A	3.1E-
	Arilmony	3.7	mg/kg	3.7	mg/kg	M	2.4E-007	mg/kg-day	4.0E-004	1	N/A	N/A	4.9E-(
	Areeric	46	mg/kg	46	moteo	m	3.0E-008	mg/kg-day	3.0E-004	mg/kg-day mg/kg-day	N/A	N/A N/A	6.0E-0
	Copper	253	mg/kg	253	mg/kg	M	1.6E-005	mg/kg-day	4.0E-002	1	N/A		1.0E-0
	Menganese	239	mgArg	239	maka	M	1.6E-005	mg/kg-day	2.4E-002	mg/kg-day mg/kg-day	N/A	N/A	4.1E-0
	Thelium	0.9	mgArg	0.9	maka	M	5.9E-008	mg/kg-day	7.0E-005		N/A	N/A	6.5E-0
	Zinc (Tok	961 a)	mg/kg	961	maka	м	6.4E-005	mg/kg-day	3.0E-001	mg/kg-day mg/kg-day	N/A	N/A N/A	0.4E-4 2.1E-4
ermal	Berzo(a)artiracene	468143	ug/kg	468143	uoka		7.9E-004						2.9E-0
	Berzo(b)fluorerthene	540875	upłeg	540875	Lightig	- T	9.1E-004	mg/kg-day	-	mg/kg-day	N/A	N/A	-
	Benzo(a)pyrane	428620	upka	428620	LIDÁKO		7.2E-004	mg/kg-day	-	mg/kg-day	N/A	N/A	-
	Indeno(1,2,3-od)pyrene	147910	upleg	147910	upAq		2.5E-004	mg/kg-day	-	mg/kg-day	NA	N/A	-
	Dibereo(e,h)erëvecene	42438	uplep	42436	LipAgi		7.2E-005	mg/kg-day	-	mg/kg-day	N/A	N/A	-
	Nephihalane	100966	upAgg	100988	ug/eg	<u> </u>	1.7E-004	mg/kg-day		mg/kg-day	N/A	N/A	-
	2-Methylmephthalane	498113	up/to	496113	upAg	<u> </u>		mg/kg-day	2.0E-002	mg/kg-day	N/A	N/A	8.5E-0
	Acenephihene	355688	upAgu	355668	ug/kg		8.4E-004 6.0E-004	mg/kg-day	2.0E-002	mg/kg-day	NA	N/A	4.2E-0
	Dibergoluran	398113	up/kp	396113	upkg	- - -	6.7E-004	mg/kg-day	6.0E-002	mg/kg-day	N/A	N/A	1.0E-0
	Ruorene	583363	upkg	563363	ug/kg			mg/kg-day	4.0E-003	mg/kg-day	N/A	N/A	1.7E-0
	Pluoreréhene	1833525	uples	1833525	up/kg		9.9E-004 3.1E-003	mg/kg-day	4.0E-002	mg/kg-day	N/A	N/A	2.5E-0
	Pyrene	1411478	upkp	1411478	ug/kg			mg/kg-day	4.0E-002	mg/kg-day	N/A	N/A	7.7E-0
	Methoxychlor	37714	UDACO	37714	ug/kg	* M	2.4E-003 4.9E-005	mg/kg-day	3.0E-002	mg/kg-day	NA	N/A	8.0E-0
i	Antimony	3.7	mp/kg	3.7	maka		4.9E-005 4.8E-007	mg/kg-day	5.0E-003	mg/kg-day	N/A	N/A	9.8E-0
	Arseric	46	make	46	make	M		maka-dey	4 0E-004	mg/kg-day	N/A	N/A	1.2E-0
	Copper	253	make	253		M	1.8E-005	mg/kg-day	3.0E-004	mg/kg-day	N/A	N/A	6.0E-0
	Manganese	239	moAco	239	mg/kg	M	3.3E-005	mg/kg-day	4.0E-002	mg/kg-day	N/A	N/A	8.2E-0
	Thellum	0.9	make	0.9	maka		3.1E-005	mg/kg-day	2.4E-002	mg/kg-day	N/A	N/A	1.3E-0
	Zinc .	961	make	981	mg/kg	M	1.2E-007	mg/kg-day	7.0E-005	mg/kg-day	N/A	N/A	1.7E-0
	(Total	***	,	37 0 I	mg/kg	W	1.3E-004	mg/kg-day	3.0E-001	mg/kg-day	N/A	N/A	4 3E-0
* . *** . *	The state of the s	Anne is a constant	1			11		ì		1	1	;	4 9E-0

⁽¹⁾ Medium-Specific (M) or Route-Specific (R) EPC selected for hezerd culculation.

⁽²⁾ Chronic.

⁻⁻ Reference Dose not available, therefore Hazard Quotient not calculated. N/A - Not Applicable.

TABLE 7.7a.RME CALCULATION OF NON-CANCER HAZARDS REASONABLE MAXIMUM EXPOSURE HORSESHOE ROAD COMPLEX SITE, SAYREVILLE, NEW JERSEY

Scenario Timefame: Future

Medium: Soll

Exposure Medium Surface Soll

Exposure Point. AOC 3 - SPD

Receptor Population: Construction Workers Receptor Aga: Add

Exposure	Chemical	Medum	Medium	Route	Route	EPC	inteke	Intake	Reference	Reference	Reference	Reference	Hezerd
Route	of Potential	EPC	EPC	EPC	EPC	Selected	(Non-Certcer)	(Non-Cancer)	Dose (2)	Dose Units	Concentration	Concentration	Quotien
	Concern	Value	Units	Value	Units	for Heamrd		Units				Units	
						Calculation (1)							
etion	Benzo(a)anthracene	1701	ug/kg	1701	ug/kg		2.0€-000	mg/kg-day		mg/kg-day	N/A	N/A	
	Benzo(b)fluorenthene	2683	ug/kg	2883	ug/kg	M	3.5E-008	mg/kg-day	_	mg/kg-day	N/A	N/A	-
	Senzo(a)pyrene	1468	ugfkg	1468	ug/kg	М	1 8E-006	mg/kg-day		mg/kg-day	N/A	NA	-
	Indeno(1,2,3-od)pyrene	1302	ug/kg	1302	ugftg	м	1.6E-006	mg/kg-day	-	mg/kg-day	N/A	N/A	
	Methoxychior	650000	ug/kg	850000	ug/kg	M	7.8E-004	mg/kg-day	5.0E-003	mg/kg-day	N/A	NA	1.6E-00
	Aluminum	8432	mg/kg	8432	mg/kg) M	1.0E-002	mg/kg-day	1.0E+000	mg/kg-day	N/A	NA	1.0E-00
	Antimony	17	mg/kg	17	mg/kg	M	2 0E-005	mg/kg-day	4.0E-004	mg/kg-day	N/A	N/A	5.1E-00
	Arsenic	24	mg/kg	24	mg/kg	M	2 9E-005	mg/kg-day	3.0E-004	mg/kg-day	N/A	NA	9 6E-00
	Copper	1519	mg/kg	1519	mg/kg	M	1.8E-003	mg/kg-day	4.0E-002	mg/kg-day	N/A	N/A	4 6E-00
	Manganese	215	mgAvg	215	mg/kg	M	2.6E-004	mg/kg-day	2.4E-002	mg/kg-day	N/A	N/A	1.1E-00
	Thellum	0.02	mg/kg	0.92	mg/kg	M	1.1E-006	mg/kg-day	7.0E-005	mg/kg-day	N/A	N/A	1 8E-00
	Vanedum	37	mg/leg	37	mg/kg	M	4.4E-005	mg/kg-day	7.0E-003	mg/kg-day	N/A	N/A	6 3E-00
	(Tot		L	_~		ĺ	_			1 .			3.9E-00
rma)	Benso(a)anthracene	1701	ughtg	1701	ughg	M	3.5E-008	mg/kg-day	-	mg/kg-day	N/A	N/A	
	Benzo(b)fluoranthene	2003	ug/kg	2883	ug/kg	M .	6 0E-006	mg/kg-day	-	mg/kg-day	N/A	N/A	-
	Benzo(a)pyrene	1488	ug/kg	1468	ug/kg	м	3.1E-006	mg/kg-day	-	mg/kg-day	N/A	N/A	-
	Indano(1,2,3-cdipyrene	1302	ug/kg	1302	ug/kg	M	2 7E-006	mg/fig-day		mg/kg-day	N/A	N/A	
	Methoxychior	660000	ug/ng	650000	ugfkg	M	1.0E-003	mg/kg-day	5.0E-003	mg/kg-day	N/A	NA	2 1E-00
	Aliminum	8432	mg/kg	8432	mg/kg	M	1.3E-003	mg/kg-day	1.0E+000	mg/kg-day	N/A	N/A	1 3E-00
	Artimony	17	mg/kg	17	mg/kg	M	2.7E-008	mg/figi-day	4 0E-004	mg/kg-day	N/A	N/A	6 8E-00
	Arsenia	24	mg/kg	24	mg/kg	M	1.2E-005	mg/kg-day	3 0E-004	mg/kg-day	N/A	N/A	3 8E-00
	Copper	1519	mgAtg	1519	mg/kg	M	2.4E-004	mg/kg-day	4.0E-002	mg/kg-day	N/A	NA	6 1E-00
	Menganese	215	maka	215	mg/kg	м	3.4E-005	mg/kg-day	2.4E-002	mg/kg-day	N/A	N/A	1.4E-00
	Thellum	0.92	mg/kg	0.92	mg/kg	M	1.5E-007	mg/kg-day	7.0€-005	mg/kg-day	N/A	N/A	2 1E-00
	Vanedum	37	mg/kg	37	mg/kg	м	5.9E-000	mg/kg-day	7.0E-003	mg/kg-day	N/A	N/A	8 5E-00
-	(Total	M) ((t	Į.	į į	II.	1	!	į	Į	(2 7E-60

(2) Chronic.

--- Reference Dose not available, therefore Hazard Quotient not calculated.

N/A - Not Applicable.

4002/2

TABLE 7.7s RME CALCULATION OF NON-CANCER HAZARDS REASONABLE MAXIMUM EXPOSURE

HORSESHOE ROAD COMPLEX SITE, SAYREVILLE, NEW JERSEY

Scenario Timeframe: Future Medium: Soli

Exposure Medium: Surface Solt Exposure Point AOC 4 - ARC

Receptor Population. Construction Workers

Receptor Age: Adult

gestion Benzofbilkorarithene Benzofalpyrene Heiszehtorobutadene Heiszehtoropelopentadene Addin Arockor-1248 Arockor-1254 Arockor-1280 2.3.7.8-TCDD equiv. Aluminum Antimony Arsente Cadmium Copper Manganese Nockel Silver Thellum Zinc (Total) ermal Benzofbilkorarithene Benzofalpyrene Heiszehtorobutadene Heiszehtorobutadene Heiszehtorobutadene Addin Arockor-1248 Arockor-1254 Arockor-1254 Arockor-1260 2.3.7.8-TCDD equiv. Aluminum Antimorny Arsente Cadmium Copper Manganese Nockel Silver	of Potential Concern	EPC Value	EPC Units	EPC Value	EPC Units	Selected for Hazerd Calculation (1)	(Non-Cancer)	(Non-Cancer) Units	Dose (2)	Dose Units	Concentration	Concentration Units	Quotien
Hexachlorobutadene Hexachlorocyclopentadene Aktrin Arockor-1248 Arockor-1254 Arockor-1260 2.3.7.8-TCDD equiv. Aluminum Antimony Arsenic Cadmium Copper Mangenese Nickel Silver Thellium Zinc (Total) Berazo(9)pyrene Hexachlorobutadene Hexachlorobutadene Aktrin Arockor-1248 Arockor-1254 Arockor-1254 Arockor-1254 Arockor-1254 Arockor-1260 2.3.7.8-TCDD equiv. Aluminum Antimomy Arsenic Cadmium Copper Mangenese Nickel	uzo(b)fluoranthene	2000	ugrkg	2600	ug/kg	M	3 1E-008	mg/kg-day		mg/kg-day	NA	NOT THE	77
Hexacritorocyclopentadene Addin Aroctor-1248 Aroctor-1254 Aroctor-1254 Aroctor-1250 2.3.7.8-TCDD equiv. Abuninum Antimony Arsenic Cadritum Copper Manganese Nickel Silver Thellum Zinc (Total) sermal Benzo(b)Nuorantinee Benzo(e)pyrene Hexacritorobutadene Hexacritorocyclopentadene Addin Aroctor-1254 Aroctor-1254 Aroctor-1254 Aroctor-1250 2.3.7.8-TCDD equiv. Abuninum Antimorry Arsenic Cadritum Copper Manganese Nickel		1800	ug/kg	1800	ugfig	M]	2 2E-008	mg/kg-day	-	mg/kg-day	N/A	N/A	-
Addin Aroclor-1248 Aroclor-1254 Aroclor-1280 2.3.7.8-TCDD equiv. Aluminum Antimony Arsantc Cadmium Copper Manganesa Nickal Silver Thellum Zinc (Total) Interest of the Aroclor-1254 Aroclor-1254 Aroclor-1254 Aroclor-1254 Aroclor-1254 Aroclor-1256 Aroclor-1250 2.3.7.8-TCDD equiv. Aluminum Antimony Anumum Antimony Arsantc Cadmium Copper Manganese Nickel		6800	ugAkg	6800	ug/kg	M	8 2E-008	mg/kg-day	2.0E-004	mg/kg-day	N/A	N/A	4 1E-002
Aroctor-1248 Aroctor-1254 Aroctor-1260 2.3.7.6-TCDD equiv. Aluminum Antimony Arsentc Cadmitum Copper Manganese Nickel Silver Thellum Zinc (Total) mitel Benzo(b)/pvene Hexachtorobutaclene Hexachtorobutaclene Hexachtorobutaclene Addin Aroctor-1248 Aroctor-1254 Aroctor-1260 2.3.7.6-TCDD equiv. Aluminum Antimorty Arsentc Cadmitum Copper Manganese Nickel	• •	57440	ugfig	57440	ug/kg	M	6.9E-005	mg/kg-day	7.0E-003	mg/kg-day	N/A	N/A	9 8E-00:
Aroctor-1254 Aroctor-1280 2.3.7.8-TCDD equiv. Aluminum Animony Arsenic Cadritum Copper Manganese Neckel Silver Thellum Zinc Zinc (Total) mitel Beraso(b)Muoranthene Beruso(8)pyrene Hexachtorobutadiene Hexachtorobutadiene Addin Aroctor-1248 Aroctor-1254 Aroctor-1254 Aroctor-1260 2.3.7.8-TCDD equiv. Aluminum Antimomy Arsenic Cadritum Copper Manganese Notrel		22	ug/kg	22	ug/kg	M	2 6E-008	mg/kg-day	3.0E-005	mg/kg-day	NA	N/A	8.8E-00-
Aroctor-1280 2.3.7.8-TCDD equiv. Aluminum Antimony Arsenic Cadmium Copper Manganese Nichel Silver Thellum Zinc (Total) what Benzo(b)fluorantime Benzo(e)pyrene Hexachlorobutsdiene Hexachlorobutsdiene Hexachlorobutsdiene Addin Aroctor-1248 Aroctor-1254 Aroctor-1254 Aroctor-1254 Aroctor-1280 2.3.7.8-TCDD equiv. Aluminum Antimorny Arsenic Cadmium Copper Manganese Nichel		891	ugfitg	891	ugfkg	M	1.1E-008	mg/kig-day	-	mg/kg-day	NA	N/A	-
2.3,7.8-TCDD equiv. Aluminum Antimony Arsenic Cadritum Copper Mangenese Nickel Silver Thellum Zinc (Total) Benao(b)fluoranthene Benao(b)pyrene Hexachtorobutadiene Hexachtoropydopentadiene Aktim Aroctor-1254 Aroctor-1254 Aroctor-1254 Aroctor-1250 2.3,7.8-TCDD equiv. Aluminum Antimorny Ansenic Cadmium Copper Mangenese Nickel		1941	ug/kg	1941	ugfkg	M	2.3E-008	mg/kg-day	2.0E-005	mg/kg-day	NA	N/A	1 2E-00
Auminum Antimony Arsenic Cadritum Copper Mangenese Nickel Silver Thellum Zinc (Total) Benaci(b)Nucrenthene Benaci(b)pyrene Hexachtorobutaclene Hexachtorobutaclene Addin Aroctor-1248 Aroctor-1254 Aroctor-1280 2,3,7,8-TCOD equiv. Aluminum Antimony Arsenic Cadritum Copper Mangenese Nickel		405	ug/kg	465	ug/kg	M	5 6E-007	mg/kg-day	-	mg/kg-day	N/A	N/A	-
Arsimony Arsentc Cadritum Copper Mangunese Neckel Silver Thellum Zinc (Total) Beraso(b)Nuoranthene Benus(8)pyrene Hexachtorobutadiene Hexachtorobutadiene Addin Aroctor-1248 Aroctor-1254 Aroctor-1254 Aroctor-1260 2,3,7,8-TCOD equiv. Aluminum Antimomy Arsentc Cadmium Copper Mangunese Nockel	7,8-TCDD equiv.	0.2	ug/kg	0.2	ugAg	M	2.4E-010	mg/kg-day	-	mg/kg-day	NA	N/A	-
Arsenic Cadhium Copper Manganese Nichel Silver Thellium Zinc (Total) small Benso(b)fluoranthene Benso(e)pyrene Hexachlorobutsdiene Hexachlorobutsdiene Hexachlorobutsdiene Addin Aroctor-1254 Aroctor-1254 Aroctor-1254 Aroctor-1250 2,3,7,8-TCOD equiv. Auminum Antimorny Arsenic Cadhium Copper Manganese Nichel	ninum	15500	mgAtg	15500	mgfkg	M	1 9E-002	mgfkg-day	1.0E+000	mg/kg-day	NYA	N/A	1.9E-00
Cadritum Copper Mangunese Nackel Silver Thellum Zinc (Total) Benao(b)Nuoranthene Benao(b)nymene Hexachtorobutadene Hexachtorobutadene Hexachtorobutadene Aidm Aroctor-1248 Aroctor-1254 Aroctor-1254 Aroctor-1254 Aroctor-1200 2,3,7,8-TCOD equiv. Auminum Anthromy Asseric Cadritum Copper Manganese Nackel	lmony	18	mg/kg	18	mg/kg	M	2.2E-005	mg/kg-day	4.0E-004	mg/kg-day	NA	N/A	5 4E-00
Copper Mangenese Nickel Silver Thellum Zinc (Total) Benas/b/Muoranthene Benas/e/pyrene Hexachtorobutadene Hexachtorobutadene Hexachtorocyctopertadene Aidrin Aroctor-1248 Aroctor-1254 Aroctor-1254 Aroctor-1280 2,3,7,8-TCDD equiv. Aluminum Anthrony Arsenic Cadmium Copper Mangenese Nickel	enic	27	mg/kg	27	mg/kg	M	3.2E-005	mg/kg-day	3.0E-004	mg/kg-clay	N/A	N/A	1 1E-00
Mangenese Nackel Silver Thellum Zinc (Total) mital Benacit/Muoranthene Benacit/Dyvene Hexachtorocyctopentaclene Hexachtorocyctopentaclene Addri Aroctor-1248 Aroctor-1254 Aroctor-1260 2,3,7,8-TCOD equiv Auminum Antimotry Arsenic Cadmium Copper Manganese Noteel	±mium	37	mg/kg	37	mg/kg	M	4.4E-005	mg/kg-day	1.0E-003	mg/kg-day	N/A	N/A	4 4E-00
Neckel Silver Thellum Zinc (Total) Benso(b)Nuoranthene Benso(b)Nuoranthene Hexachtorobutscliene Hexachtorobutscliene Addm Aroctor-1248 Aroctor-1254 Aroctor-1254 Aroctor-1280 2,3,7,8-TCDD equiv. Aluminum Antimomy Arsenic Cadmium Copper Manganese Noticel	aper	501	mg/kg	591	mg/kg	M	7.1E-004	mg/kg-day	4.0E-002	mg/kg-day	NA	N/A	1 8E-00
Silver Thelium Zinc (Total) mal Benzo(b)fluoranthene Benzo(e)pyrene Hexachtorobutadene Hexachtorocyclopentadene Aktrin Aroctor-1248 Aroctor-1254 Aroctor-1260 2,3,7,8-TCOD equiv Auminum Antimony Arsenic Cadmium Copper Manganese Notel	ngenese	461	mg/kg	461	mgfkg	M	5.5E-004	mg/leg-day	2.4E-002	mg/kg-day	N/A	N/A	2 3E-00
Thellum Zinc (Total) Benso(b)fluoranthene Benso(b)pyrene Hexachtorobutadene Hexachtorocyclopertadene Aktrin Aroctor-1248 Aroctor-1254 Aroctor-1260 2,3,7,8-TCDD equiv Aluminum Antimorty Arsentc Cadmium Copper Manganese Noctel	ket	298	mg/kg	296	mg/kg	M	3.6E-004	mg/kig-day	2.0E-002	mg/kg-day	N/A	N/A	1 6E-00
Zinc (Total) Beraxi(b)Nuoranthene Beraxi(a)pyrene Hexachtorobutadiene Hexachtorobytadiene Hexachtorocyctopentadiene Addin Aroctor-1248 Aroctor-1244 Aroctor-1244 Aroctor-1280 2,3/7,8-TCOD equiv. Auminum Antimorty Arsenic Cadmium Copper Manganese Noticel	rer	287	mafka	267	mg/kg	М .	3 4E-004	mg/kg-day	5.0E-003	mg/kg-day	N/A	N/A	6.9E-00
(Total) Benzo(b)Nuoranthene Benzo(e)pyrene Hexachforobutadiene Hexachforocyclopentadene Addin Aroctor-1248 Aroctor-1254 Aroctor-1254 Aroctor-1280 2,3,7,8-TCOD equiv. Auminum Antimorny Arsenic Cadmium Copper Manganese Notrel	Mum	0.72	marka	072	mg/kg	M	8 6E-007	mg/kp-dey	7.0E-005	mg/kg-day	N/A	N/A	1 2E-00
(Total) Benzo(b)Nuoranthene Benzo(e)pyrene Hexachforobutadiene Hexachforocyclopentadene Addin Aroctor-1248 Aroctor-1254 Aroctor-1254 Aroctor-1280 2,3,7,8-TCOD equiv. Auminum Antimorny Arsenic Cadmium Copper Manganese Notrel	=	9172	mg/kg	9172	mg/kg	l M	1 1E-002	mg/kg-day	3.0E-001	mg/kg-day	N/A	N/A	3.7E-00
Benzo(#)pyrene Hexachtorobutadiene Hexachtorocyclopentadiene Akidin Aroctor-1248 Aroctor-1254 Aroctor-1260 2.3,7,8-TCDD equiv. Aluminum Antimorty Arsentc Cadmium Copper Manganese Nickel		_								•••			5 7E-00
Hexachlorobutadene Hexachlorocyclopertadene Addin Aroctor-1248 Aroctor-1254 Aroctor-1260 2,3,7,8-TCOD equiv. Aluminum Antimorty Arsenic Cadnium Copper Manganese Notel		2800	ug/kg	2000	ug/kg	M	5.4E-008	mg/kg-day	~	mg/kg-day	N/A	NVA	1 1
Hexachlorobutadene Hexachlorocyclopentadene Addin Avoclor-1248 Avoclor-1254 Avoclor-1260 2,3,7,8-TCOD equiv. Aluminum Antimorry Arsenic Cadmium Copper Manganese Nickel	ngo(8)Dyrene	1800	ирћа	1800	ug/kg	M	3 7E-006	mg/kg-day	-	marka-day	N/A	N/A	i -
Hexachlorocyclopentadene Addin Aroctor-1248 Aroctor-1254 Aroctor-1280 2,3,7,8-TCOD equiv. Auminum Antimorhy Arsenic Cadmium Copper Manganese Notice!	- · · · ·	6800	ugfig	6800	ug/kg	M	1.1E-005	mg/kg-day	2 0E-004	mg/kg-day	N/A	N/A	5 4E-00
Addin Aroctor-1248 Aroctor-1254 Aroctor-1260 2,3,7,8-TCOD equiv. Aluminum Antimorry Arsentc Cadmium Copper Manganese Notel		57440	ug/kg	57440	ughq	M	9.2E-005	mg/kg-day	7 0E-003	mg/kg-day	N/A	N/A	1 3E-00
Aroctor-1248 Aroctor-1254 Aroctor-1260 2,3,7,8-TCDD equiv. Aluminum Antimorty Arsentc Cadmium Copper Manganese Nickel		22	upto	22	ughg	m	3 5E-008	mg/kg-day	3.0E-005	mg/kg-day	N/A	N/A	1.2F-00
Aroclor-1254 Aroclor-1280 2,3,7,8-TCDD equiv. Aluminum Antimorty Arsenic Cadnium Copper Manganese Nickel		891	ugita	891	ug/kg	M	2 0E-006	mg/kg-day	-	mg/kg-day	N/A	N/A	
Aroclor-1280 2.3.7.8-TCOD equiv Auminum Antimomy Arsenic Cadmium Copper Manganese Notes		1941	uarka	1941	ughg	, M	4 3E-006	mg/kg-day	2.0E-005	markg-day	N/A	N/A	2 2€-00
2,3,7,8-TCOD equiv. Aluminum Antimony Ansaric Cadmium Copper Manganese Notel		405	uphp	465	ughg	, m	1.0E-006	mg/kg-day	-	mg/kg-day	NA	N/A	2 21-00
Auminum Antimony Arsente Cadnium Copper Manganese Notel		0.2	ug/vg	02	1 -	<u>"</u>	9.6E-011	mg/kg-day	_	mg/kg-day	N/A	N/A	_
Antimorty Ansenic Cadmium Copper Manganese Notel	•	15500		15500	ughg		2 5E-003	mg/kg-day	1 0E+000	mg/kg-day	N/A	N/A	2 5E-00
Arsenic Cadritum Copper Manganese Notes		1	mg/kg	}	mg/kg	M	2.9E-008	1	4.0E-004	mg/kg-day	N/A	N/A	7 2E-00
Cadmium Copper Manganese Neckel	· •	10	mgfkg	18	mgArg		1 3E-005	mg/kg-day		1	N/A	N/A	
Copper Manganese Nickel		27	mg/kg	27	mg/kg	M		mg/kg-day	3.0E-004	mg/kg-day	N/A	N/A	4 3E-00
Manganese Nickel		37	mg/kg	37	mg/kg	M	5.9E-007	mg/kg-day	1.0E-003	mg/kg-day	N/A	N/A	5 9E-00
Nickel	•	591	mg/kg	591	mg/kg	M	9.5E-005	mg/kg-day	4 0E-002	mg/kg-day	N/A	N/A	2 4E-00
	•	461	mgftg	461	mgfkg	M	7.4E-005	mg/kg-day	2 4E-002	mg/kg-day	1		3 1E-00
Silver		298	mg/kg	296	mg/kg	M	4.7E-005	mg/kg-day	2 0E-002	mg/kg-day	N/A	N/A	2 4E-00
		287	mg/kg	287	mg/kg	M	4.6E-005	mg/kg-day	5.0E-003	mg/kg-day	NA	N/A	9 2E-00
Thellium	S um	0.72	mg/kg	0 72	mg/kg	M	1 2E-007	mg/kg-day	7.0E-006	mg/kg-day	NA	N/A	1 8E-00
Zinc	•	9172	mg/kg	9172	mg/kg	M	1 5E-003	mg/kg-day	3 0E-001	mg/kg-day	NA	N/A	4 9E-00

⁽¹⁾ Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

⁽²⁾ Chronic.

^{- -} Reference Dose not available, therefore Hazard Quotient not calculated. N/A - Not Applicable

TABLE 7.76 RME CALCULATION OF NON-CANCER HAZARDS REASONABLE MAXIMUM EXPOSURE HORSESHOE ROAD COMPLEX BITE, SAYREVILLE, NEW JERSEY

Scenerio Timeframe Future

Medium Soll

Exposure Medium Subsurface Soil Exposure Point: AOC 1 - HRDD

Reciptor Population: Construction Workers

Receptor Age. Adult

ADC-SUF-G	Chemical	Medium	Medum	Route	Route	EPC	Intake	Intake	Reference	Reference	Reference	Reference	Hazard
Route	of Potential	EPC	EPC	EPC	EPC	Selected	(Non-Caincer)	(Non-Cancer)	Dose (2)	Dose Units	Concentration	Concentration	Quotien
	Concern	Value	Units	Value	Units	for Hazard		Units		i		Units	
						Calculation (1)							
stion					; ;		1 27	†				}	
	Arocior-1248	1300	ugfkg	1300	ugAtg	M	1 6E-008	mg/kg-day		mg/kg-day	N/A	N/A	_
	Aroclor-1254	96	ug/kg	96	ug/kg	M	1 2E-007	mg/kg-day	2 0E-005	mg/kg-day	N/A	N/A	5.8E-00
	Arodor-1260	3100	ug/kg	3100	ug/kg	M	3 7E-008	mg/kg-day	-	mg/kg-day	N/A	N/A	
	Aluminum	10685	mg/kg	10685	mg/kg	M	1 3E-002	mg/kg-day	1 0E+000	mg/kg-day	N/A	NVA	1.3E-00
	Antimony	51	mg/kg	51	mg/kg	M	6 1E-006	mg/kg-day	4.0E-004	mg/kg-day	N/A	NA	1 5E-0
	Arsenic	24.5	mg/kg	24 5	mg/kg	M	2 9E-005	mg/kg-day	3 0E-004	mg/kg-day	N/A	N/A	9 8E-00
	Cadhium	4.4	mgAkg	44	mg/kg	M	5 3E-008	mg/kg-day	1 0E-003	mg/kg-day	N/A	N/A	5.3E-00
	Copper	1222	mg/kg	1222	mg/kg	M	1 5E-003	mg/kg-day	4.0E-002	mg/kg-day	N/A	N/A	3 7E-00
	Mangenese	486	mg/kg	486	mg/kg	м	5 8E-004	mg/kg-day	2 4E-002	mg/kg-day	N/A	N/A	2.4E-0
	Nichel	174	mg/kg	174	mg/kg	M	2.1E-004	mg/kg-day	2 0E-002	mg/kg-day	N/A	N/A	1.0E-0
	Theflum	2.5	mg/kg	2.5	mgAcg	M	3 0E-006	mg/kg-day	7 0E-005	mg/kg-day	N/A	N/A	4 3E-0
	Vanadum	50	mg/kg	50	mg/kg	M	6 0E-005	mg/kg-day	7 0E-003	mg/kg-day	N/A	N/A	8.6E-00
	(Total)												2.6E-00
•	Arodor-1248	1300	ugftg	1300	ugfkg	M	2 96-008	mg/kg-day	_	mafka-day	N/A	NA	
	Arodor-1254	96	ua/kg	96	ug/kg	M	2 2E-007	mafkq-day	2.0E-005	mg/kg-day	N/A	NVA	1.1E-0
	Aroclor-1260	3100	ug/kg	3100	ug/kg	m	6 9E-006	marke-day	_	mg/kg-day	N/A	N/A	
	Aluminum	10685	mgAg	10685	mafkg	M	1 7E-003	mg/kg-day	1.0E+000	mg/kg-day	N/A	N/A	1 7E-0
	Antimory	5.1	marks	5.1	marka	M	8 2E-007	mg/kg-day	4 0E-004	mg/kg-day	NA	NA	2 0E-0
	Arsenic	24.5	marka	24 5	mg/kg	M	1 2E-005	mg/kg-day	3.0E-004	mg/kg-day	N/A	N/A	3.9E-0
	Cadmium	4.4	mg/kg	4.4	mg/kg	м	7 0E-008	mg/kg-day	1 0E-003	mg/kg-day	N/A	N/A	7 0E-0
	Copper	1222	mg/kg	1222	mg/kg	м	2 0E-004	mg/kg-day	4.0E-002	mg/kg-day	NA	N/A	4.9E-0
	Manganose	486	mg/kg	486	mg/kg	M	7 8E-005	mg/kg-day	2 4E-002	mg/kg-day	NA	NA	3 2E-0
	Nickel	174	mg/kg	174	mg/kg	м	2 8E-005	mg/kg-day	2 0E-002	mg/kg-day	NVA	N/A	1 4E-0
	Thallium	2.5	mg/kg	2.5	mg/kg	M	4 0E-007	mg/kg-day	7 0E-005	mg/kg-day	NA	N/A	5 7E-0
	Vanedum	50	mg/kg	50	mg/kg	M	8.0E-006	mg/kg-day	7.0E-003	mg/kg-day	N/A	N/A	1.1E-0
	(Total)					1				1	1	1	7 0E-0

⁽¹⁾ Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

N/A - Not Applicable

⁽²⁾ Chronic.

⁻⁻ Reference Dose not available, therefore Hazard Quotient not calculated.

TABLE 7.7b.RME CALCULATION OF NON-CANCER HAZARDS REASONABLE MAXIMUM EXPOSURE HORSESHOE ROAD COMPLEX SITE, BAYREVILLE, NEW JERSEY

Scorario Timeframe: Flåre Medium: Sall

Exposure Medium: Test Pit Soll Exposure Point: AOC 1 - HRDD

Receptor Population: Construction Workers Receptor Age: Adult

Exposure .	Charrical	Medium	Medium	Route	Route	ERC	intako	Irtako	Reference	Reference	Reference	Reference	Hazerd
Route	of Potential	EPC	EPC	EPC	EPC	Selected	(Non-Cancer).	(Non-Cancer)	Dose (2)	Dose Units	Concentration	Concentration	Quotient
	Concern	Velue .	Urits	Value	Urite	for Heaterd		Urits	ł	i		Urits	ľ
			İ			Celculation (1)							
gestan	Berzo(e)pyrene	1548	ughgi	1344	ugAtg		1.85-008	mg/kg-day		mg/kg-day	NA	NA	
	Arodor-1248	41000	ugita	41000	upkg	M	4.9E-005	mg/kg-dey	-	mg/kg-day	N/A	N/A	-
	Arodor-1254	6200	Lights	6200	Lig/kg	M	7.4E-006	mg/kg-day	2.0E-005	mg/kg-day	N/A	N/A	3.7E-001
	Artimony	1308	motes	1306	mg/kg	M	1.6E-003	mg/kg-day	4.0E-004	mg/kg-day	N/A	N/A	3.9E+000
	Arearia	707	mgAg	707	mg/kg	M	8.5E-004	mg/kg-dey	3.0E-004	mg/kg-day	N/A	N/A	2.8E+000
	(Total)								,				7.1E+000
emel .	Benzo(s)pyrene	1348	ug/kg	1346	upleg	M	2.8E-008	mg/kg-day	-	mg/kg-day	N/A	N/A	-
	Arodor-1248	41000	ughg	41000	ug/kg	₩.	9.2E-00\$	mg/kg-day	-	mg/kg-day	N/A	N/A	-
	Arodor-1254	6200	uplay	8200	upleg	M	1.4E-005	mg/kg-day	2.0E-005.	mg/kg-day	N/A	N/A	6.9E-001
	Arilmony	1308	mg/kg	1308	mg/kg	M	2.1E-004	mg/kg-day	4.0E-004	mg/kg-day	N/A	N/A	5.2E-001
	Arseric	707	mg/kg	707	mg/kg	M	3.4E-004	mg/kg-day	3.0E-004	mg/kg-day	N/A	N/A	1.1E+000
	(Total)				((l	1	ex Across Al Exposur		2.3E+000

(1) Medium-Specific (M) or flouis-Specific (R) EPC selected for hazard calculation.

(2) Chroric.

-- Reference Dose not available, therefore Hazard Quotient not calculated. N/A - Not Applicable.

TABLE 7.7b.CT CALCULATION OF NON-CANCER HAZARDS CENTRAL TENDENCY EXPOSURE HORSESHOE ROAD COMPLEX SITE, SAYREVILLE, NEW JERSEY

Scerario Timultame: Fullure

Medium: Sall

Exposure Medium: Test PN Soll

Exposure Point: AOC 1 - HRDD

Receptor Population: Construction Workers

Receptor Age: Adult

Exposure	Chemical	Medum	Medium	Route	Route	EPC	irdake	irtake	Reference	Reference	Reference	Reference	Hezerd
Rouse	of Potential	EPC	EPC	EPC	EPC	Selected	(Non-Cartoar)	(Non-Cancer)	Dose (2)	Dose Units	Concentration	Concentration	Quotent
	Concern	Value	Urits	Velue	Urite	for Hezerd		Urits		1		Unite	
						Calculation (1)							
pedan	Berzo(e)pyrene	184	ug/kg	184	ug/kg	a	2.2€-007	mg/kg-day		mg/kg-day	R/A	N/A	
	Arodor-1248	3882	Lightig	3882	ug/kg	M	4.7E-008	mg/kg-day	-	mg/kg-day	N/A	N/A	-
	Arodor-1254	1105	ug/kg	1105	ugArg	M	1.3E-006	mg/kg-day	2.0E-005	mg/kg-day	N/A	N/A	6.6E-002
	Artimory	3.2	mgAg	3.2	mg/kg	M	3.8E-006	mg/kg-day	4.0E-004	mg/kg-day	NA	N/A	9.6E-003
	Arseric	33	mpfeg	33	mg/kg	M I	4.0E-005	mg/kg-day	3.0E-004	mg/kg-day	N/A	N/A	1.3E-001
	(Total)							[2.1E-001
ma	Berzo(s)pyrere	184	ugArg	184	ug/kg	M T	3.8E-007	mg/kg-day	-	mg/kg-day	N/A	N/A	1 -
	Arodor-1248	3882	ug/kg	3882	ug/kg	M	8.7E-006	mg/kg-day	-	mg/kg-dey	NA	N/A	-
	Arodor-1254	1105	ug/kg	1105	ug/kg	M	2.5E-006	mg/kg-day	2.0E-005	mg/kg-day	NA	N/A	1.2E-001
	Arismony	3.2	mg/kgr	3.2	mg/kg	M	5.1E-007	mg/kg-day	4.0E-004	mg/kg-day	N/A	N/A	1.3E-003
	Arseric	33	mg/leg	33	mg/kg	M	1.6E-005	mg/kg-day	3.0E-004	mg/kg-day	N/A	N/A	5.3E-002
	(Total)				1	į .		Į l	Į.	į į		Į.	1.8E-001

(1) Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

(2) Chroric.

-- Reference Dose not available, therefore Hezard Quotiers not calculated.

N/A - Not Applicable.

TABLE 7 75 RME CALCULATION OF NON-CANCER HAZARDS REASONABLE MAXIMUM EXPOSURE HORSESHOE ROAD COMPLEX SITE, SAYREVILLÉ, NEW JERSEY

Scenario Time/rame Future Medium: Soll

Exposure Medium: Subsurface Soil Exposure Point: AOC 2 · ADC

Receptor Population Construction Workers

Exposure	Chemical	Medium	Medium	Route	Route	EPC	Intake	Intake	Reference	Reference	Reference	Reference	Heart
Route	of Potential	EPC	EPC	EPC	EPC	Selected	(Non-Cancer)	(Non-Cancer)	Dose (2)	Dose Units	Concentration	Concentration	Quotien
	Concern	Value	Units	Value	Units	for Hezerd Calculation (1)		Units				Units	
gestion	1,2-Dichlaroethene	390000	ug/kg	390000	ug/kg	† • ta	4.7E-004	rhg/kg-day	3 0€-002	mg/kg-day	N/A	N/A	1.6E-00
	Servici(b)Ruoranthene	3149	ugfkg	3148	ugfkg	M	3 8E-006	mg/kg-day	-	mg/kg-day	N/A	N/A	-
	Benito(a)pyrene	4713	ug/kg	4713	ug/kg	M	5.7E-006	mg/kg-day		mg/kg-day	N/A	N/A	
	Methoxychlor	760000	ug/kg	780000	ugfkg	M	9 1E-004	mg/kg-day	5 0E-003	mg/kg-day	N/A	N/A	1 8E-00
	Aractor-1242	10538	ugfkg	10538	ugfkg	M	1.3E-005	mg/kg-day	-	mg/kg-day	N/A	N/A	_
	Arodor-1248	74000	ug/kg	74000	ug/kg	M	8 9E-005	mg/kg-day	-	mg/kg-day	N/A	N/A	
	Aradnic	828	mg/kg	828	m g/ kg	M	9.9E-004	mg/kg-day	3 0E-004	mg/kg-day	N/A	N/A	3.3E+00
	Thelium	1.8	mg/kg	18	mg/kg	M	2 2E-006	rtigfkg-day	7 0E-005	mg/kg-day	N/A	N/A	3 1E-00
mel	(Tot	390000		390000		·			3.0E-002		N/A	N/A	3.5E+0
TTTE	1,2-Dignoroemine Benin(b)fluoranthene	3149	ugfig	390000	ug/kg		6.2E-003 6.5E-006	mg/kg-day		mg/kg-day	N/A	N/A	2 1E-00
	Benito(a)pyrane	4713	ugfkg	4713	ug/kg	, m	9.8E-008	rhg/kg-day rhg/kg-day	_	mg/kg-day mg/kg-day	NA	N/A	-
	Melhorychlar	760000	ughg	760000	ug/kg	, <u>"</u>	1.2E-003	mg/kg-day	5.0E-003	mg/kg-day	NA	N/A	2.4E-00
	Arockor-1242	10536	ughg	10538		, m	2 4E-005	mg/kg-day	5.02-003	mg/kg-day	N/A	N/A	2.45-00
	Aroclor-1248	74000	uafka	74000	ug/kg	M	1.7E-004	mg/kg-day	_	mg/kg-day	N/A	N/A	
	Arsenic	828	maka	828	marka	- E	4 DE-004	ing/kg-day	3.0E-004	mg/kg-day	N/A	N/A	1 3E+0
	Thelium	1.8	mafka	1.8	maka	W	2 9E-007	mg/kg-day	7.0E-005	mg/kg-day	N/A	N/A	4 1E-00
	(Tot	1	""y"	\ .		1 "	2.00.	" " " " " " " " " " " " " " " " " " "	7.02-003		1	1	185+

(1) Medium-Specific (M) or Route-Specific (R) EPC selected for hazard autoutation

(2) Chronic.

--- Reference Dose not available, therefore Hezard Quotient not calculated

N/A - Not Applicable

TABLE 7.7b.CT CALCULATION OF NON-CANCER HAZARDS CENTRAL TENDENCY EXPOSURE HORSESHOE ROAD COMPLEX SITE, SAVREVILLE, NEW JERSEY

Scarario Timeframe: Pulaze
Medium: Soli
Exposure Nedium: Subsurface Soli
Exposure Point: ACC 2 - ADC
Receptor Population: Construction Workers
Receptor Age: Adult

Exposure	Chemical	Medium	Medium	Route	Route	EPC	Irtake	Irdako	Reference	Reference	Reference	Reference	Hezerd
Route	of Potential	EPC	EPC	EPC	EPC	Selected	(Non-Cancer)	(Non-Cancer)	Dose (2)	Dose Units	Concentration	Concentration	Quotieri
	Concern	Value	Urits	Value	Uritte	for Hazard Calculation (1)		Urits				Urits	
gestan	1,2-OldNoroshare	26703	ugling	26703	upAg	· · · · · · · · · · · · · · · · · · ·	3.2E-005	molito-day	3.0E-002	mg/kg-day	N/A	N/A	1.1E-003
	Bengo(b)Buorenthene	490	ugAig	490	uphy	N	5.9E-007	mg/kg-day	-	mg/kg-dey	N/A	N/A	_
	Berzo(a)pyrene	563	upAg	563	uplay	M	6.8E-007	mg/kg-day	-	mg/kg-day	N/A	N/A	_
	Methoxychior	64833	ugAq	64833	ugArg	M	7.8E-005	mg/kg-day	5.0E-003	mg/kg-day	N/A	N/A	1.6E-00
	Arodor-1242	76.6	ugAg	76.8	ugAgu	M	9.2E-008	mg/kg-day	-	mg/kg-day	N/A	N/A	_
	Aroder-1215	7261	ug/kg	7261	ug/kg	M	8.7E-006	mg/kg-day	-	mg/kg-day	N/A	N/A	-
	Arseric	21	mg/kg	21	mg/kg	M	2.5E-005	mg/kg-day	3.0E-004	mg/kg-day	N/A	N/A	8.4E-00
	Thellum (Total	1	make	1	mg/kg	м	1.2E-006	mg/kg-day	7.0E-005	mg/kg-day	N/A	N/A	1.7E-00 1.2E-00
	1,2-Dichleroethene	26703	UD/4g	26703	ug/kg	M	4.3E-004	mg/kg-day	3.0E-002	moleo-dev	N/A	N/A	1.4E-00
	Bergo(b)fluorerthene	490	up/kg	490	ug/kg	M	1.0E-008	mg/kg-day	_	me/kp-day	N/A	N/A	-
	Benzo(a)pyrene	563	upAq	563	upkp	M	1.2E-008	mg/kg-day	_	mg/kg-day	N/A	N/A	_
	Methoxychior	64833	Upfice	84833	ug/kg	M	1.0E-004	mg/kg-day	5.0E-003	mg/kg-dey	NA	N/A	2.1E-00
	Arodor-1242	76.8	ug/kg	76.6	ug/kg	M	1.7E-007	mg/kg-day	_	mg/kg-day	N/A	N/A	_
	Arodor-1248	7261	upArg	7261	ugAg	M	1.6E-005	mg/kg-day	_	mg/kg-day	N/A	N/A	_
	Arseric	21	mgAg	21	mg/kg	M	1.0E-005	mg/kg-day	3.0€-004	mg/kg-day	N/A	N/A	3.4E-00
	Thellum	1 1	maka	1	mg/kg	M	1.6E-007	mg/kg-day	7.0E-005	mg/kg-day	N/A	N/A	2.3E-00
	(Total)				İ		1				1	7.1E-00

- (1) Medium-Specific (M) or Route-Specific (R) EPC selected for hezard calculation.
- (2) Chronic.
- -- Reference Dose not available, therefore Hazard Cuotient not calculated. N/A Not Applicable.

TABLE 7.76 RME CALCULATION OF NON-CANCER HAZARDS REASONABLE MAXIMUM EXPOSURE HORSESHOE ROAD COMPLEX SITE, SAYREVILLE, NEW JERSEY

Scenario Timehame: Future Medium: Sali

Exposure Medium: Subsurface Soil Exposure Point: AOC 3 - 8PD Receptor Population: Construction Workers

	Receptor Populetion: Construction	Workers											
	Receptor Age: Adult	TO A THE PERSON OF THE PERSON		ļ									
residence e	The second second second	the state of the s		, 1	,		u					ger titte en e g e	
Exposure	Chemical	Medum	Medium	Route	Route	EPC	Irteke	trteke	Reference	Reference	Reference	Reference	Hezero
Route	of Potertial	EPC	EPC	EPC	EPC	Selected	(Non-Cancer)	(Non-Cencer)	Dose (2)	Dose Units	Concentration	Concentration	Quote
	Concern	Value	Urits	Velue	Urits	for Hazard Calculation (1)		Urits				Units	
jeston	The state of the s		1		1		ll K		2000				
	Benzo(a)pyrene	93	ug/kg	93	upAq	M	1.1E-007	mg/kg-day	_	me/ko-day	N/A	NA	_
	Arodor-1254	164	ug/kg	164	ug/kg	M	2.0E-007	mg/kg-day	2.0E-005	mg/kg-dey	N/A	N/A	9.8E-00
	Arodor-1290	176	ug/kg	176	ug/kg	M	2.1E-007	mg/kg-day	-	mg/kg-dey	N/A	N/A	
	Methoxychlor	18000	LIGANG .	18000	ugAg	M	2.2E-005	mg/kg-day	5.0E-003	mg/kg-day	N/A	N/A	4.3E-00
	Auminum	9062	mg/kg	9082	mg/kg	M	1.1E-002	mg/kg-day	1.0E+000	mg/kg-dey	N/A	N/A	1.1E-00
	Artimony	0.83	mg/kg	0.83	mp/kg	M	1.0E-008	mg/kg-day	4.0E-004	mg/kg-day	N/A	N/A	2.5E-00
	Arseric	29	mg/kg	29	mg/kg	M	3.5E-005	mg/kg-day	3.0E-004	make-day	N/A	N/A	1.2E-00
	Cadmium	0.67	mg/kg	0.67	mg/kg	M	8.0E-007	mg/kg-day	1.0E-003	mp/kg-dey	N/A	N/A	8.0E-00
	Manganese	197	mg/kg	197	mg/kg	M	2.4E-004	mg/kg-day	2.4E-002	marko-day	N/A	N/A	9.9E-00
	Thellum	1.2	mg/kg	1.2	mg/kg	M	1.4E-006	mg/kg-day	7.0E-005	maka-day	N/A	NA	2.1E-00
	Veradium	33	mg/kg	33	mg/kg	M	4.0E-005	mg/kg-day	7.0E-003	make-dev	N/A	N/A	5.7E-00
rmid	(Total)		I									,,	1.8E-00
1714													
	Berzo(a)pyrene	93	ug/kg	93	ug/kg	M	1.9E-007	mg/kg-day	-	mg/kg-day	N/A	N/A	-
	Arodor-1254 Arodor-1280	164	ug/kg	164	ug/kg	M	3.7E-007	mg/kg-dey	2.0E-005	mg/kg-day	N/A	N/A	1.8E-00
	1	176	up/kg	176	ug/kg	M	3.9E-007	mg/kg-day	-	mg/kg-day	N/A	N/A	_
	Methoxychlor Aluminum	18000	ug/kg	18000	ug/kg	M	2.9E-005	mg/kg-day	5.0E-003	mg/kg-day	N/A	N/A	5.8E-00
		9062	mg/kg	9082	mg/kg	M	1.5E-003	mg/kg-day	1.0E+000	mg/kg-day	N/A	N/A	1.5E-00
	Artimony	0.83	maka	0.83	mg/kg	M	1.3E-007	mg/kg-day	4.0E-004	mg/kg-day	N/A	N/A	3.3E-00
	Arseric	29	mg/kg	29	mg/kg	M	1.4E-005	mg/kg-day	3.0E-004	mg/kg-day	N/A	N/A	4.6E-00
	Ceditium	0.67	mg/kg	0.67	mg/kg	M	1.1E-006	mg/kg-day	1.0E-003	mg/kg-day	N/A	N/A	1.1E-00
	Margerese	197	make	197	mg/kg	M	3.2E-005	mg/kg-day	2.4E-002	mg/kg-day	N/A	N/A	1.3E-00
	Thellum	1.2	mgArg	1.2	mg/kg	M	1.9E-007	mg/kg-day	7.0E-005	mg/kg-day	N/A	N/A	2.7E-00
	Venedium (Total)	33	mg/kg	33	mg/kg	M	5.3E-008	mg/kg-day	7.0E-003	mg/kg-day	N/A	N/A	7.5E-00
. =====================================		:	1	ا - ا	l ,	i	l	I		L,.,	K Across All Exposure		7.7E-00

⁽¹⁾ Medium-Specific (M) or Roule-Specific (R) EPC selected for hezard calculation.

N/A - Not Applicable.

⁽²⁾ Chroric.

^{- -} Reference Dose not evallable, therefore Hezerd Quotiers not calculated.

TABLE 7 75 RME CALCULATION OF NON-CANCER HAZARDS REASONABLE MAXIMUM EXPOSURE HORSESHOE ROAD COMPLEX SITE, SAVREVILLE, NEW JERSEY

Scenario Timeframe Future

Medium: Soll

Exposure Medium: Test Pit Soil Exposure Point: AOC 3 - SPD

Receptor Population: Construction Workers

Receptor Age: Adult

Exposure	Chemical	Medium	Medium	Route	Route	EPC	Intake	Intake	Reference	Reference	Reference	Reference	Hezerd
Route	of Potential	EPC	EPC	EPC	EPC	Selected	(Noh-Cancer)	(Non-Cancer)	Dose (2)	Dose Units	Concentration	Concentration	Quotient
	Concern	Velue	Units	Value	Utilts	for Hezerd		Units	1		ļ	Units	
						Calculation (1)							
pestion	 			† : †						·			
	Hexachloroethene	10,201,148	ug/kg	10,201,148	ug/kg	M	1.2E-002	rhgfkg-day	1.0E-003	mg/kg-day	N/A	N/A	1.2E+00°
	Senzo(a)pyrene	4700	ugArg	4700	ug/kg	M	5.6E-006	rigRg-day	-	mg/kg-day	NVA	N/A	-
	Dibenzo(a,h)enthracene	920	ugfkg	920	ugfkg	M	1 1E-008	mg/kg-day	_	mg/kg-day	N/A	N/A	-
	Aroctor-1248	21000	ugfkg	21000	ug/kg	M	2 SE-005	mg/kg-day	-	mg/kg-day	N/A	NA	-
	Aroctor-1254	6000	ug/kg	6000	ugfkg	M [7 2E-006	mg/kg-day	2.0E-005	mg/kg-day	N/A	NA	3 6€-001
	Arsenic	77	mg/kg	77	mgftg) M]	9.2E-005	rhg/kg-day	3.0E-004	mg/kg-day	N/A	N/A	3.1E-001
	Copper	32300	mg/kg	32300	mg/kg	M	3.9E-002	rhg/kg-day	4.0E-002	mg/kg-day	N/A	NA	9 7E-001
	(Total)	L	1	1				l		l			1.4E+00
rmai									}	I			
	Hexachioroethene	10,201,148	ughtg	10,201,148	ugfkg	M 1	1.8E-002	mg/kg-day	1.0E-003	mg/kg-day	N/A	NA	1.8E+00
	Benzo(a)pyrene	4700	ugfkg	4700	ug/kg	<u> </u>	9 8E-006	mg/kg-day	-	mg/kg-day	N/A	NVA	-
	Dibergo(s,h)enthracene	920	ug/kg	920	ug/kg	M	1.9E-006	rhg/kg-day	-	mg/kg-day	N/A	N/A	-
	Aroclor-1248	21000	ug/kg	21000	ugfkg	M	4 7E-005	mg/kg-day		mg/kg-day	N/A	NYA	-
	Aroctor-1254	6000	ug/kg	6000	ugfkg	M	1.3E-005	mg/kg-day	2.0E-005	mg/kg-day	N/A	NYA	6.7E-00
	Areenic	77	mg/kg	77	mg/kg	M	3 7E-005	rhgfkg-day	3.0E-004	mg/kg-day	N/A	N/A	1 2E-00
	Copper	32300	mg/kg	32300	mg/kg	M	5.2E-003	mg/kg-day	4.0E-002	mg/kg-day	N/A	N/A	1 3E-00
	(Total)	<u></u>	Į.						1		ļ		1.7E+00

(1) Medium-Specific (M) or Route-Specific (R) EPC selected for hazard delculation.

(2) Chronic.

--- Reference Dose not available, therefore Hazard Quotient not calculated.

N/A - Not Applicable.

TABLE 7.7b.CT CALCULATION OF NON-CANCER HAZARDS CENTRAL TENDENCY EXPOSURE HORSESHOE ROAD COMPLEX SITE, SAYREVILLE, NEW JERSEY

Scarato Timetana: Filtre

Medium: Gall

Exposure Medium: Test PK Soll

Exposure Point: AOC 3 - SPD

Receptor Population: Construction Workers

Receptor Age: Adult

Exposure Roule	Chemical of PoterEal Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Inteles (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quolleri
allon			† == 	TOTAL TITLE		-			· ····································		e		• • • • • • • • • • • • • • • • • • •
	Hexachiorosthene	1751	up/kg	1751	ug/kg	M	2.15-006	mg/kg-day	1.0E-003	mg/kg-day	N/A	N/A	2.1E-003
	Benzo(a)pyrene	2000	upfq	2000	ug/kg	M	2.4E-006	mp/kg-day	-	mg/kg-day	N/A	N/A	-
	Olbenzo(a,h)#r#vscurre	820	ugArg	920	ug/kg	M	1.1E-008	mg/kg-day	-	mg/kg-day	N/A	N/A	-
	Arodor-1248	3331	nayea	3331	ug/kg	M	4.0E-008	mg/kg-day	-	mg/kg-day	N/A	N/A	-
	Arodor-1254	764	ug/kg	764	ug/kg	M	9.2E-007	mg/kg-dey	2.0E-005	mg/kg-day	N/A	N/A	4.6E-00
	Arseric	21.5	moAss	21.5	mg/kg	M	2.6E-005	mg/kg-dey	3.0E-004	mg/kg-day	NA	N/A	8.6E-007
	Copper (Total)	3502	mpAq	3502	mg/kg	M	4 2E-003	mg/kg-day	4.0E-002	mg/kg-day	N/A	N/A	1.1E-00 2.4E-00
nei		as an appropriate two is with a second			i	=							
	Hexachioroethans	1751	up/kg	1751	up/kg	M	2.8E-006	ing/kg-day	1.0E-003	mg/kg-day	N/A	N/A	2.8E-00
	Berzo(a)pyrene	2000	upkg	2000	ugAq	M	4.2E-006	mg/kg-day	-	mg/kg-day	N/A	N/A	-
	Dibergo(a h)arthrecene	820	upleg	920	Lokes	M	1.9E-006	mg/kg-day) -	mg/kg-day	N/A	NA	-
	Arodor-1248	3331	upter	3331	Lights	M	7.5E-006	mg/kg-day	-	mg/kg-day	N/A	N/A	-
	Arodor-1254	764	ugArg	764	ug/kg	M	1.7E-006	mg/kg-day	2.0E-005	mg/kg-dey	N/A	N/A	8.6E-00
	Arseric	21.5	mg/kg	21.5	mg/kg	M	1.0E-005	mg/kg-day	3.0E-004	mg/kg-day	N/A	N/A	3.4E-00
	Copper (Total)	3502	mg/kg	3502	mg/kg	м	5.6E-004	mg/kg-day	4 0E-002	mg/kg-dey	N/A	N/A	1.4E-00

(1) Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

(2) Chroric.

-- Reference Dose not available, therefore Hezard Quotient not calculated. N/A - Not Applicable.

TABLE 7 75 NME CALCULATION OF NON-CANCER HAZARDS REASONABLE MAXIMUM EXPOSURE HORSESHOE ROAD COMPLEX SITE, SAYREVILLE, NEW JERSEY

Scenario Timetame: Future

Aedium Soil

Exposure Medium Subsurface Soil

Exposure Point AOC 4 - ARC

Receptor Population: Construction Workers

Receptor Age: Adult

Exposure	Chemical	Medium	Medium	Route	Route	EPC	Intake	Intake	Reference	Reference	Reference	Reference	Hezard
Route	of Potential	EPC	EPC	EPC	EPC	Selected	(Non-Cancer)	(Non-Cancer)	Dose (2)	Dose Units	Concentration	Concentration	Quotier
	Concern	Value	Units	Value	Units	for Hazard		Unite				Units]
						Calculation (1)							İ
etton	Tetrachioroethene	19252	ug/kg	19252	ug/kg	, M. F	Ž 3E-00Š	mg/kg-day	0E-002	mg/kg-day	NYA	NZA	2 3E-00
	Chiorobenzene	29736	ugfkg	29736	ugfkg	M	3.6E-005	mg/kg-day	2 0E-002	mg/kg-day	N/A	N/A	1 8E-00
	Benzo(a)anthracene	793	ugfig	793	ugfkg	M	9.5E-007	mg/kg-day	-	mg/kg-day	N/A	N/A	-
	Benzo(b)fluoranthens	830	ugfkg	830	ug/kg	M	1 0E-006	mg/kg-day		mg/kg-day	N/A	N/A	-
	Benzo(a)pyrene	767	ug/kg	767	ugfkg	M	9 2E-007	mg/kg-day		mg/kg-day	N/A	N/A	- 1
	Indeno(1,2,3-cd)pyrene	693	ugfkg	693	ug/kg	M	8 3E-007	mgfkg-day	-	mg/kg-day	N/A	N/A	- 1
	1,2,4-Trichlorobenzene	112667	ugfkg	112667	ugfkg	l M	1.4E-004	mg/kg-day	1.0E-002	mg/kg-day	N/A	N/A	1.4E-0
	Aldrin	5.7	ug/kg	5.7	ugNg	M	6 8E-009	mg/kg-day	3 0E-005	mg/kg-day	N/A	N/A	2.3E-0
	Aroclor-1248	149	ugfkg	149	ugfkg	M	1.8E-007	mg/kg-day	-	mg/kg-day	N/A	N/A	
	Aroctor-1254	56	ug/kg	58	ugfkg	M	6 7E-008	mg/kg-day	2.0E-005	mg/kg-day	N/A	₩A	3 4E-0
	Aluminum	13018	mg/kg	13018	mg/kg	M 1	1.6E-002	mgfkg-day	1 0E+000	mg/kg-day	N/A	N/A	1.8E-0
	Antimony	2.1	mg/kg	2.1	mgAcg	l M	2.5E-008	mg/kg-day	4.0E-004	mg/kg-day	NVA	N/A	6.3E-0
	Arsenic	13	mg/kg	13	mg/kg	M	1.6E-005	mg/kg-day	3.0E-004	mg/kg-day	N/A	N/A	5 2E-0
	Manganese	133	mg/kg	133	mg/kg	M	1.6E-004	mg/kg-day	2 4E-002	mg/kg-day	N/A	N/A	6 7E-0
	Theflum	1.1	mg/kg	1.1	mg/kg	M	1.3E-006	mg/kg-day	7.0E-005	mg/kg-day	N/A	N/A	1.9E-0
	Vanedium	43	mg/kg	43	mg/kg	M	5 2E-005	mg/kg-day	7.0E-003	mg/kg-day	N/A	N/A	7.4E-0
	(Tel	3	1	1		1						}	1 36 0
70	Tetrachloroethene	19252	ug/kg	19252	ugfkg	M	3 1E-004	mg/kg-day	1 0E-002	mg/kg-day	N/A	NA	3 1E-0
	Chlorobenzene	29736	ugfkg	29736	ugfkg	M	4 8E-004	mg/kg-day	2.0E-002	mg/kg-day	N/A	NA	2.4E-0
	Senzo(a)enthracene	793	ugfkg	793	ugfkg	M	1.6E-006	mg/kg-day	-	mg/kg-day	N/A	N/A	-
	Senato(b)fluoranthene	830	ugfkg	830	ugfkg	м	1.7E-006	mg/kg-day		mg/kg-day	N/A	N/A	-
	Benzo(a)pyrene	787	ug/kg	787	ugfkg	M	1 6E-006	mg/kg-day	\ <u></u>	mg/kg-day	NA	NA	-
	Indeno(1,2,3-cd)pyrene	693	ugfkg	693	ug/kg	M	1 4E-008	mg/kg-day	_	mg/kg-day	N/A	NA	
	1,2,4-Trichtorobenzene	112687	ug/kg	112687	ugftg	M	1.8E-004	mg/kg-day	1.0E-002	mg/kg-day	N/A	N/A	1 8E-0
	Aldrin	5.7	ug/kg	57	ugfkg	M	9 1E-009	mg/kg-day	3.0E-005	mg/kg-dey	N/A	N/A	3 0E-0
	Aroclor-1248	149	ugfkg	148	ug/kg	M	3 3E-007	mg/kg-day	_	mg/kg-day	N/A	N/A	-
	Aroclor-1254	56	ug/kg	56	ugfkg	M	1 3E-007	mg/kg-day	2 0E-005	mg/kg-day	NA	N/A	6 3E-0
	Aluminum	13018	mgftg	13018	mg/kg	м !	2 1E-003	mg/kg-day	1 0E+000	mg/kg-day	N/A	NA	2.1E-0
	Antimony	21	mg/kg	21	mg/kg	M	3 4E-007	mg/kg-dey	4 0E-004	mg/kg-day	N/A	NA	8 4E-0
	Arsenic	13	mgfkg	13	mg/kg	M	6 2E-006	mg/kg-day	3.0E-004	mg/kg-day	N/A	NYA	2.1E-0
	Manganese	133	mg/kg	133	mg/kg	м	2 1E-005	mg/kg-day	2 4E-002	mg/kg-day	N/A	NA	8 9E-0
	Theffum	1.1	mg/kg	11	mg/kg) M	1.8E-007	mg/kg-day	7.0E-005	mg/kg-day	N/A	N/A	2 5E-0
	Vanedum	43	matka	43	marka	м !	6 9E-006	mg/kg-day	7 0E-003	mg/kg-day	NVA	N/A	9 8E-0

⁽¹⁾ Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

⁽²⁾ Chronic

 $[\]sim$ - Reference Dose not available, therefore Hazard Quotient not calculated.

N/A - Not Applicable

TABLE 7 B RME CALCULATION OF NON-CANCER HAZARDS REASONABLE MAXIMUM EXPOSURE HORSESHOE ROAD COMPLEX SITE, SAVREVILLE, NEW JERSEY

Scenario Timefrante Future
Medium: Building Materialis
Exposure Redium: Batiding Materialis
Exposure Redium: Batiding Materialis
Exposure Point: ACC 2 - ADC
Receptor Population: Site Workters
Receptor Age: Adult

Exposure	Chemical	Medium	Medium	Route	Route	EPC	Intake	intake	Reference	Reference	Reference	Reference	Hazerd
Route	of Potential	EPC	EPC	EPC	EPC	Selected	(Non-Cancer)	(Non-Cancer)	Dose (2)	Dose Units	Concentration	Concentration	Quotier
	Concern	Value	Linits	Value	Units	for Hazard Calculation (1)		Units				Units	
etion	Benzo(a)enthracene	1100600	ug/kg	1100000	Ugikg		5 4E-004	mg/kg-day		mg/kg-day	NA.		*********
	Berzo(b)Autranthene	1400000	ыд∕ка	1400000	ug/kg	M	6 9E-004	mg/kg-day	-	mg/leg-day	NA	N/A	-
	Benzo(s)pyrene	1100000	ug/kg	1100000	uplkg	M	5 4E-004	mg/kg-day		mg/kg-day	NVA	N/A	_
	Indeno(1.2.3-cd)pyrene	300000	ug/kg	300000	ug/kg	M	1 5E-004	mg/kg-day		mg/kg-day	NA	N/A	_
	Dibenzo(a.h)enthracene	90000	ug/kg	90000	ugfkg	M	4 4E-005	mg/kg-day		mg/kg-day	NA	NA	-
	Nephthalene	320000	ug/kg	320000	ugfkg	M	1.6E-004	mg/kg-day	2.0E-002	mg/kg-day	NA	N/A	7 8E-00
	2-Methylnaphthalana	1100000	ug/kg	1100000	ug/kg	M	5 4E-004	mg/kg-day	2.0E-002	mg/kg-day	N/A	N/A	2.7E-00
	Acenaphthene	800000	ug/kg	800000	Ugfkg	M	3 DE-004	mg/kg-day	6.0E-002	mg/kg-day	NA	N/A	6 5E-00
	Dibenzofurtin	1000000	ug/kg	1000000	ugfkg	M	4.9E-004	mg/kg-day	4 0E-003	mg/kg-day	N/A	NA	1.2E-00
	Fluorene	1600000	ugfkg	1000000	ugfkg	M	7.8E-004	mg/kg-day	4 0E-002	mg/kg-day	N/A	N/A	2.0E-00
	Fluoranthene	3000000	ugArg	3900000	ug/kg	M	1 9E-003	mg/kg-day	4.0E-002	mg/kg-day	N/A	N/A	4.8E-00
	Pyrene	2000000	ug/kg	2900000	ugfig	M	1 4E-003	mg/kg-day	3 0E-002	mg/kg-day	NA	N/A	4 6E-00
	Methoxychlor	150000	ug/kg	150000	ugikg	M	7.4E-005	mg/kg-day	5.0E-003	mg/kg-day	N/A	N/A	1 5E-0
	Antimony	5.7	mg/kg	5.7	mg/kg	M	2 8€-006	mg/kg-day	4.0E-004	mg/kg-day	NA	N/A	7.0E-0
	Arsenic	84	mg/kg	84	mg/kg	M	4 1E-005	mg/kg-day	3.0E-004	mg/lig-dey	N/A	N/A	1.4E-0
	Copper	495	mg/kg	495	mg/kg	M	2 4E-004	mg/kg-dey	4.0E-002	mg/leg-day	NA	N/A	6 1E-00
	Manganese	495	mg/kg	495	mgfkg	M	2 4E-004	mg/kg-day	2 4E-002	mg/kg-day	N/A	N/A	1 0E-0
	Thallum	1.8	mafks	18	mg/kg	M	8 8E-007	mg/kg-day	7.0E-005	mg/kg-day	N/A	N/A	1.3E-0
	Zinc	3050	mg/kg	3050	mg/kg	w	1 5E-003	mg/kg-day	3.0E-001	mg/kg-day	N/A	N/A	5.0E-00
	(Tota	n]	1]]	1	ì	4.7E-0
mai	Benzo(s)enthracene	1100000	ug/kg	1100000	ug/kg	M	0 2E-003	mg/kg-day	·	mg/kg-day	NVA	~·· NA	-
	Benzo(b)fluoranthene	1400000	ug/kg	1400000	ug/kg	i w	1.0E-002	mg/kg-day	_	mg/kg-day	N/A	NA	_
	Benzo(a)pyrene	1100000	ug/kg	1100000	ug/kg	M	8 2E-003	mg/kg-day	_	mg/kg-day	N/A	N/A	_
	Indeno(1,2,3-cd)pyrene	300000	ug/kg	300000	ugfig	M	2 2E-003	mg/kg-day		mg/kg-day	N/A	N/A	_
	Olbergo(a,h)anthracene	90000	up/kg	90000	ug/kg	M	6 7E-004	mg/kg-day		mg/kg-day	NA	N/A	_
	Naphthalerie	320000	ug/kg	320000	ug/kg	M	2 4E-003	mg/kg-day	2.0E-002	mg/kg-day	N/A	N/A	1.2E-00
	2-Methylnaphthelene	1100000	ugfkg	1100000	ug/kg	M	0 2E-003	mg/kg-day	2.0E-002	mg/kg-day	N/A	N/A	4.1E-0
	Acenephthene	800000	ug/kg	800000	ug/kg	M	5 9E-003	mg/kg-day	6 0E-002	mg/kg-day	N/A	N/A	9 9E-0
	Dibengoluran	1000000	ug/kg	1000000	ugfkg	M	7 4E-003	mg/kg-day	4 0E-003	mg/kg-day	NA	N/A	1 9E+0
	Fuorene	1600000	ug/kg	1800000	ug/kg	M	1.2E-002	mg/kg-day	4 0E-002	mg/kg-day	N/A	N/A	3 0E-0
	Fluoranthene	3900000	ug/kg	3000000	ug/kg	M	2 9E-002	mg/kg-day	4 0E-002	mg/kg-day	N/A	N/A	7.2E-0
	Pyrene	2800000	up/kg	2800000	ug/kg	M	2 1E-002	mg/kg-day	3 0E-002	mg/kg-day	N/A	N/A	8 9E-0
	Methoxychlor	150000	ug/kg	150000	ug/kg	M	8 6E-004	mg/kg-day	5 0E-003	mg/kg-day	N/A	N/A	17E-0
	Antimony	5.7	mg/kg	5.7	mg/kg	M	3.2E-008	mg/kg-day	4 0E-004	mg/kg-day	N/A	N/A	0 1E-0
	Arsenic	84	ma/kg	84	marka	M	1 4E-004	mg/kg-day	3 0E-004	mg/kg-day	N/A	N/A	4 8E-0
	Copper	495	mg/kg	495	mg/kg	M	2 BE-004	mg/kg-day	4 0E-002	mg/kg-day	NA	N/A	7 1E-0
	Manganese	495	mg/kg	495	mg/kg	 M	2 8E-004	mg/kg-day	2 4E-002	mg/kg-day	N/A	N/A	1.2E-0
	Theffum	10	marka	1.0	mg/kg	M	1.0E-008	mg/kg-day	7 0E-005	mo/kg-day	N/A	NA	1 5E-0
	Zinc	3050	mg/kg	3050	mg/kg		1 7E-003	mg/kg-day	3 0E-001	mg/kg-day	N/A	NA	5 0E 0
	(Tota				,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	I		,	1		1		4 9E+0

⁽¹⁾ Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation

⁽²⁾ Chronic.

⁻⁻⁻ Reference Dose not available, therefore Hazard Quotient not calculated N/A - Not Applicable.

TABLE 7.8 CT CALCULATION OF NON-CANCER HAZARDS CENTRAL TENDENCY EXPOSURE HORSESHOE ROAD COMPLEX SITE, SAYREVILLE, NEW JERSEY

Scenario Timeframs: Future
Medium: Building Materials
Exposure Medium: Building Meterials
Exposure Point: ACC 2 - ADC
Receptor Population: Site Workers
Receptor Age: Adult

Exposure	Chemical	Medium	Medium	Route	Route	EPC	Intake	trtake	Reference	Reference	Reference	Reference	Hezerd
Route	of Potential	EPC	EPC	EPC	EPC	Selected	(Non-Cencer)	(Non-Cancer)	Dose (2)	Dose Units	Concentration	Concentration	Quotien
	Concern	Volum	Urits	Velue	Units	for Hazard Calculation (1)		Urits				Units	
elon	Benzo(a)erenseme	488145	ugiliaj	465145	ugykg	. M	9.4E-505	mg/kg-day	1. V225*******	mg/kg-day	N/A	NA	
	Benzo(b)fluorerthene	540875	upAg	540875	up/kg	M	9.7E-005	mg/kg-day	_	mg/kg-day	N/A	N/A	-
	Benzo(s)pyrune	428620	ugAg	420620	upAq	M	8.5E-005	mg/kg-day	-	mg/kg-day	N/A	N/A	-
	Indeno(1,2,3-od)pyrene	147910	ugAg	147910	ug/kg	M	3.0E-005	mg/kg-day	-	mg/kg-day	N/A	N/A	-
	Dibenzo(a.h) u:@vacene	42438	LigAtg	42438	LIDAG:	M	8.5E-008	mg/kg-day	l -	mg/kg-day	N/A	N/A	-
	Nephilalene	100968	ug/kg	100988	ugAg	M	2.0E-005	mg/kg-day	2.0E-002	mg/kg-day	N/A	N/A	1.0E-00
	2-Methytraphthetene	498113	ugAg	496113	ug/kg	M	1.0E-004	mg/kg-day	2.0E-002	mg/kg-day	N/A	N/A	5.0E-00
	Acenephihene	355888	ugArg	355888	ug/kg	M	7.1E-005	mg/kg-day	6.0E-002	mg/kg-day	N/A	N/A	1.2E-00
	Dibenzoturan	398113	ug/kg	396113	ug/kg	M	8.0E-005	mg/kg-day	4.0E-003	mg/kg-day	N/A	N/A	2.0E-00
	Ruorene	583363	ugAg	583363	ugArg	M	1.2E-004	mg/kg-day	4.0E-002	mg/kg-day	N/A	N/A	2.9E-00
	Fluorenthene	1833525	upfep	1833525	upłeg	M	3.7E-004	mg/kg-day	4.0E-002	mg/kg-day	N/A	N/A	9.2E-0
	Pyrene	1411478	ugfig	1411478	upleg	M	2.8E-004	mg/kg-day	3.0E-002	mg/kg-day	N/A	N/A	9.4E-0
	Methoxychlar	37714	ugArg	37714	upług	M	7.5E-008	mg/kg-day	5.0E-003	mg/kg-day	N/A	N/A	1.5E-0
	Arismony	3.7	mgAcc	3.7	mg/kg	M	7.4E-007	mg/kg-day	4.0E-004	mg/kg-day	N/A	N/A	1.9E-0
	Arseric	46	mgArg	46	mg/kg	M	9.2E-008	mg/kg-day	3.0E-004	mg/kg-day	N/A	N/A	3.1E-0
	Copper	253	maka	253	mg/kg		5.1E-005	mg/kg-dey	4.0E-002	mg/kg-day	N/A	N/A	1.3E-0
	Merqurese	239	morke	239	mp/kp	M	4.8E-005	mg/kg-day	2.4E-002	mg/kg-day	N/A	N/A	2.0E-0
	Thellum	0.9	mg/kg	0.9	ma/ka	M	1.8E-007	mg/kg-day	7.0E-005	mg/kg-day	N/A	N/A	2.6E-0
	Zinc	961	mg/kg	961	maka	M	2.0E-004	mg/kg-day	3.0E-001	mg/kg-day	NA	N/A	6.5E-0
	(10	tel)		ļ									8.9E-0
	Bengo(a)er@yacene	466143	ug/kg	488143	_ uoka	M	2.2E-003	mg/kg-day	1 12 1	mg/kg-day	NA	ÑÃ	-
	Benzo(b)fluorarthene	540875	ugAg	540875	LupAup	M	2.5E-003	mg/kg-day	i -	mg/kg-day	N/A	N/A	-
	Benzo(a)pyrane	426620	ugArg	426620	Up/kg	M	2.0E-003	mg/kg-day	_	mg/kg-day	N/A	N/A	-
	Indeno(1,2,3-cd)pyrene	147910	up/ng	147910	upArp	M	6.9E-004	mg/kg-day	_	mg/kg-day	N/A	N/A	_
	Dibenzo(a,h)erdivacene	42438	upAqp	42438	upka	M	2.0E-004	mg/kg-day	_	mg/kg-day	NA	N/A	-
	Nachthalana	100968	ug/gg	100968	uaka	M	4.7E-004	make-day	2.0E-002	mg/kg-day	N/A	N/A	2.4E-0
	2-Methylmechtholone	496113	uptq	498113	upho	i u	2.3E-003	mg/kg-day	2.0E-002	mg/kg-day	N/A	N/A	1.2E-0
	Acenephihene	355888	ug/kg	355888	upkg	M	1.7E-003	mg/kg-day	6.0E-002	mg/kg-day	N/A	N/A	2.8E-0
	Olbersoluran	308113	upłka	396113	upAq	. M	1.9E-003	mg/kg-day	4.0E-003	mg/kg-day	N/A	N/A	4.7E-0
	Rugrene	583363	Lephop	563363	upkq	M	2.7E-003	mg/kg-day	4.0E-002	mg/kg-day	N/A	N/A	8.8E-0
	Pugranthene	1633525	uptop	1833525	upkq	M	8.6E-003	mg/kg-day	4.0E-002	mg/kg-day	N/A	N/A	2.1E-0
	Pyrene	1411478	upho	1411478	upAca	i iii	6.6E-003	mg/kg-day	3.0E-002	mg/kg-day	N/A	N/A	2.2E-0
	Methosychior	37714	up/kg	37714	upka	l iii	1.4E-004	mg/kg-day	5.0E-003	mg/kg-day	N/A	N/A	2.7E-
	Arilmony	3.7	mpfeg	3.7	maka	M	1.3E-008	mg/kg-dey	4.0E-004	mg/kg-day	NA	NA	3.3E-
	Arseric	46	mgAcg	46	mgAga		5.0€-005	mg/kg-day	3.0E-004	mg/kg-day	N/A	N/A	1.7E-4
	Copper	253	mgAsg	253	make	, m	9.1E-005	marka-day	4.0E-002	mg/kg-day	N/A	N/A	2 3E-0
	1 **	239	mgAg	239	maka	, a	8.6E-005	mg/kg-day	2.4E-002	mg/kg-day	N/A	N/A	3.6E-0
	Manganese Thelium	0.9	markes	0.9	maka	, m	3.2E-007	mg/kg-day	7.0E-005	make-day	NA	NA	4.8E-0
	Inmum Zinc	981		961	mg/kg	M	3.5E-004	mg/kg-day	3.0E-001	mg/kg-day	N/A	N/A	1.2E-0
	Zinc (To	***	mg/kg	, so,	mg/mg		3.52-004		J.V2VV1	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	1	1	1.3E+0

⁽¹⁾ Medium-Specific (M) or Route-Specific (R) EPC selected for hezerd calculation.

⁽²⁾ Civarie.

⁻⁻ Reference Dose not available, therefore Hazard Quotient not calculated. N/A - Not Applicable.

TABLE 7 8 RME CALCULATION OF NON-CANCER HAZARDS REASONABLÉ MAXIMAM EXPOSURE HORSESHOE ROAD COMPLEX SITE. SAVREVILLE, NEW JERSEY

Scenario Timeltame: Future
Medium: Building Materiale
Exposure Medium: Building Materiale
Exposure Point: AOC 4 - ARC
Receptor Population: Stal Workers
Receptor Age: Adult

Exposure	Chemical	Medium	Medium	Route	Route	EPC	intalte	blaire	Reference	Reference	Reference	Reference	Hazard
Route	of Potential	EPC	EPC .	EPC	EPC	Selected	(Non-Cancer)	(Non-Cancer)	Dose (2)	Dose Units	Concentration	Concentration	Quotient
	Concern	Value	Units	Value	Units	for Hazarti		Units		<u>{</u>		Units	ĺ
						Calculation (1)							
position		 	 						10 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1				
	Aroclor-1254	30000	ugfkg	30000	ugfkg	M	1 5E-005	mg/kg-day	2.0E-005	mg/kg-day	NA	N/A	7.4E-001
	2,3,7,8-TCDD équiv.	17	ugfkg	17	ug/kg	м	8.3E-009	mg/kg-day	-	-mg/kg-day	N/A	N/A] -
	Antimony	31700	mg/kg	31700	mg/kg	м	1.6E-002	mg/kg-day	4.0E-004	mg/kg-day	N/A	N/A	3.9E+001
	Arsenic	254	mg/kg	254	mg/kg	M	1 2E-004	mg/kg-day	3.0E-004	mg/kg-day	NA	NVA	4 1E-001
	(Total												4 0E+00
rinal		T								1			1
	Aroclor-1254	30000	ugfig	30000	ugfkg	M !	2.4E-004	mg/kg-day	2 0E-005	mg/kg-day	N/A	N/A	1.2E+001
	2,3,7,8-TCDD etuly	17	ugfte	17	ug/kg	M I	2 9E-006	mg/kg-day	-	mg/kg-day	N/A	N/A	-
	Antimony	31700	mg/kg ;	31700	mg/kg	M	1 8E-002	mg/kg-day	4 0E-004	mg/kg-day	N/A	N/A	4 5E+00
	Arsenic	254	mg/kg	254	mg/kg	M	4.3E-004	mg/kg-day	3.0E-004	mg/kg-day	N/A	N/A	1 4E+00
T-200	(Total)	1		ĺ		İ				İ	l	5 9E+00

- (1) Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.
- (2) Chronic

- - Reference Dose not $\hat{\boldsymbol{s}}$ valiable, therefore Hazard Quotient not catculated. N/A - Not Applicable.

TABLE 7.0.CT CALCULATION OF NON-CANCER HAZARDS CENTRAL TENDENCY EXPOSURE HORSESHOE ROAD COMPLEX SITE, SAYREVILLE, NEW JERSEY

Scenario Tinetame: Future Exposure Medium: Building Materi Exposure Point: AOC 4 - ARC Receptor Population: Site Workers
Receptor Age: Adult

Exposure	Cherrical	Medium	Medium	Rosto	Route	€PC	intake	Intake	Reference	Reference	Reference	Reference	Hazard
Route	of Potential	EPC	EPC	EPC	EPC	Selected	(Non-Cancer)	(Non-Cancer)	Dose (2)	Dose Units	Concentration	Concentration	Quotien
	Centern	Value	Links	Value	Units	for Hezerd		Unite				Units	
	1				i	Calculation (1)				1			1
idan	THE TOTAL SECTION SECTION OF THE SEC							· ····································			·	रित्या राज्यकार 🕳 🖘 र	·
	Arcolor-1254	5500	ughtg	5500	HONG	M	1.1E-006	mg/kg-day	2.0E-005	mg/kg-day	N/A	N/A	5.6E-00
	2,3,7,6-TCDD equiv.	3.2	ugAqu	3.2	иолю	M	6.4E-010	mg/kg-day	_	mg/tq-day	NA	N/A	_
	Antimony	8017	mgArg	9017	mg/kg	M	1.8E-003	mg/kg-day	4.0E-004	mg/kg-day	NA	N/A	4.5E+00
	Arsenic	155	mg/kg	155	mg/kg	M	3.1E-005	mg/kg-dey	3.0E-004	mg/kg-day	NA	NA	1.0E-00
	(Tota	m)			-					' '			4.7E+00
net	1				1	İ							
	Aroctor-1254	5500	uphy	5500	ug/kg	■ ■	2.0E-006	mg/kg-day	2.0E-006	mg/kg-day	N/A	N/A	1.4E+00
	2,3,7,6-TCDQ equiv.	3.2	ughg	3.2	ug/kg	M	3.5E-000	mg/kg-day	-	mg/kg-dey	NA	N/A	_
	Artimony	9017	mg/kg	9017	maring	M	3.2E-003	mg/kg-day	4.0E-004	mg/kg-day	N/A	N/A	8.1E+00
	Areenic	155	mg/kg	155	marka	M	1.7E-004	mg/kg-day	3.0E-004	mg/kg-day	NA	NA	5.66-00
	(Teta	-n		i	1]			1.0E+00

(1) Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculat (2) Chronic.

-- Reference Dose not available, therefore Hazard Quotient not calculated

N/A - Not Applicable.

TABLE 7 9 RME CALCULATION OF NON-CANCER HAZARDS REASONABLE MAXIMUM EXPOSURE HORSESHOE ROAD COMPLEX SITE, SAYREVILLE, NEW JERSEY

Scenario Timetrame Future Medium: Building Materials Exposure Medium: Building Materials Exposure Point: AOC 2 - ADC Receptor Population: Construction Workers Receptor Age Adult

Exposure	Chemical	Medium	Medium	Route	Route	EPC	Intake	Intake	Reference	Reference	Reference	Reference	Hazard
Route	of Potential	EPC	EPC	EPC	EPC	Selected	(Non-Cancer)	(Non-Cancer)	Dose (2)	Dose Units	Concentration	Concentration	Quotier
	Concern	Value	Units	Value	Units	for Hezerd		Units	2000 (11)		Concentiation	Units	Cubire
				İ		Calculation (1)		1					ļ
gestion	Benzo(a)enthracene	1100000	up/kg	1100000	ug/kg	T	₹ \$E-063	mg/kg-day	a mas and	mg/kg-day	NX	WA	1.140000.000
	Benzo(b)Muoraréhene	1400000	ug/kg	1400000	ug/kg	M	1 7E-003	mg/kg-day	_	mg/kg-day	N/A	N/A	_
	Senzo(a)pyrene	1100000	ug/lig	1100000	ug/kg	M .	1 3E-003	mg/kg-day		mg/kg-day	N/A	N/A	_
	Indeno(1,2,3-cd)pyrene	300000	ug/kg	300000	ugfug	M	3 6E-004	mg/kg-day	~	mg/kg-day	N/A	N/A	
	Dibenzo(a,h)enthracene	90000	ug/kg	90000	ugArg	M	1 1E-004	mg/kg-day	_	ma/ko-day	N/A	N/A	
	Naphthalene	320000	ug/kg	320000	ug/kg	M	3 8E-004	mg/kg-dey	2 0E-002	mg/kg-day	N/A	N/A	106-0
	2-Methylnephthelene	1100000	ug/kg	1100000	ug/kg	M	1.3E-003	mg/kg-day	2 0E-002	ma/kg-day	N/A	N/A	6.6E-0
	Acenaphthène	600000	ug/kg	800000	ug/kg	M	9 8E-004	mg/kg-dey	8 0E-002	mg/kg-day	N/A	N/A	1.6E-0
	Dibenzofurtin	1000000	ugAcg	1000000	ugAtg	M	1 2E-003	mg/kg-day	4.0E-003	mg/kg-day	NA	N/A	3 0E-0
	Fluorene	1000000	ug/kg	1600000	ug/kg	M	1 DE-003	mg/kg-day	4.0E-002	mg/kg-day	N/A	N/A	4.8E-0
	Fluoranthene	3900000	ug/kg	3900000	ug/kg	M	4 7E-003	mg/kg-day	4.0E-002	mg/kg-day	N/A	N/A	1.2E-0
	Pyrene	2000000	ug/kg	2000000	ug/kg	M	3 4E-003	mb/kp-day	3.0E-002	mg/kg-day	N/A	N/A	1.1E-0
	Methoxychior	150000	ug/kg	150000	ug/kg	M	1 0E-004	mg/kg-day	5.0E-003	mg/kg-day	N/A	N/A	3.6E-0
	Antimony	5.7	mg/kg	5.7	mg/kg	M	6.8E-006	mb/kp-day	4.0E-004	mg/kg-day	N/A	NA	1.7E-0
	Arsenic	34	mg/kg	84	mg/kg	M	1.0E-004	mg/kg-day	3.0E-004	mg/kg-day	N/A	N/A	3 4E-0
	Copper	495	mg/kg	495	mg/kg	M	5.9E-004	mp/kg-day	4.0E-002	mg/kg-day	N/A	N/A	1 5E-0
	Manganesė	495	mg/kg	495	mg/kg	M	5 9E-004	mg/kg-day	2.4E-002	mg/kg-day	N/A	N/A	2 5E-0
	Thellum	1.8	mg/kg	1.8	mg/kg	M	2 2E-006	mb/kg-day	7 0E-005	mg/kg-day	N/A	N/A	3.1E-0
	Zinc	3050	mg/kg	3050	mg/kg	M	3 7E-003	mg/kg-day	3.0E-001	mg/kg-day	N/A	N/A	1.2E-00
<u> </u>	(Tol		<u> </u>										1.1E+0
_	Benzo(s)enthracene	1100000	ug/kg	1100000	ug/kg		1.7E-004	mg/kg-day		mg/kg-day	WX	. NÃ	
	Senzo(b)Nioranthene	1400000	mD/sd	1400000	ug/kg	M	2 2E-004	mg/kg-day	-	mg/kg-day	NA	N/A	_
	Benzo(a)pyrene	1100000	ug/kg	1100000	ug/kg	M	1.7E-004	mg/kg-day	-	mg/kg-day	NA	N/A	_
	Indeno(1,2,3-od)pyrene	300000	ug/tig	300000	ug/kg	•	4.7E-005	mg/kg-day		mg/kg-day	NA	N/A	-
	Dibenzo(s,h)enthracene	90000	ug/kg	90000	ug/kg	M	1.4E-005	mg/kg-day	-	mg/kg-day	N/A	N/A	
	Maphthalene	320000	nayea	320000	ug/kg	M	5 0E-005	mb/kg-day	2 0E-002	mg/kg-day	N/A	NYA	2.5E-00
	2-Methylnaphthalene	1100000	nD _y ca	1100000	ug/kg	M	1 7E-004	mg/kg-day	2 0E-002	mg/kg-day	NA	N/A	8 6E-0
	Aconophthene	800000	n9/kg	800000	ug/kg	M	1 2E-004	mg/kg-day	6 0E-002	mg/kg-day	NA	N/A	2 1E-0
	Olberssohran	1000000	ug/kg	1000000	ug/kg	M	1.6E-064	mg/kg-day	4.0E-003	mg/kg-day	NA	N/A	3 9€-0
	Fluorene	1600000	ug/kg	1600000	ug/kg	₩	2 5E-004	mg/kg-day	4 0E-002	mg/kg-day	N/A	NYA	\$ 2E-00
	Fluoranthene	3900000	ug/kg	3900000	ug/kg	₩	8.1E-004	mg/kg-day	4 0E-002	mg/kg-day	N/A	N/A	1.5E-0
	Pyrene	2900000	ug/kg	2800000	ug/kg	M	4 4E-004	mg/kg-day	3 0E-002	mg/kg-day	N/A	N/A	1 5E-0
	Methoxychlor	150000	ug/kg	150000	ug/kg	w	1 8E-005	mg/kg-day	5.0E-003	mg/kg-day	N/A	NA	3 6E-0
	Antimony	5.7	mg/kg	5.7	mg/kg	M	6 6E-008	mg/kg-day	4.0E-004	mg/kg-day	NA	N/A	1 7E-0
	Arsenic	#	mg/kg	84	mg/kg	₩	3 0E-006	mg/kg-day	3.0E-004	mg/kg-day	N/A	N/A	1.0E-0
	Copper	495	mg/kg	495	mg/kg	M	5 9E-008	mg/kg-day	4.0E-002	mg/kg-day	N/A	N/A	1 5E-0
	Manganese	495	mg/kg	495	mg/kg	w	5 9E-006	mg/kg-day	2.4E-002	mg/kg-day	N/A	N/A	2 5E-D
	Theilum	1.0	mg/kg	1.8	mg/kg	M	2 2E-008	mg/kg-day	7.0E-005	mg/kg-day	N/A	N/A	3 1E-0
	Zinc	3050	mg/kg	3050	mg/kg	M	3 7E-005	mg/kg-day	3.0E-001	mg/kg-day	N/A	N/A	1 2E-00
	(Total	M)			l l					,	1	ſ	OE-O

⁽¹⁾ Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

⁽²⁾ Chronic

⁻⁻ Reference Dose not available, therefore Hazard Quotient not calculated. NVA - Not Applicable

TABLE 7.9.CT CALCULATION OF NON-CANCER HAZARDS CENTRAL TENDENCY EXPOSURE HORSESHOE ROAD COMPLEX SITE, SAYREVILLE, NEW JERSEY

Scerario Timeframe: Future Medium: Building Materials Exposure Medium: Building Materials

Exposure Point: AOC 2 - ADC

Receptor Population: Construction Workers

Receptor Age: Add

apost.re	Chemical	Medum	Medium	Route	Route	EPC	irtaice	Intoico	Reference	Reference	Reference	Reference	Hezen
Route	of Potential	EPC	EPC	EPC	EPC	Selected	(Non-Cancer)	(Non-Cancer)	Dose (2)	Dose Units	Concentration	Concentration	Quote
	Concern	Value	Urits	Velue	Urits	for Hezerd Calculation (1)		Urits				Urits	
	Benzo(a)erfinacina	466143	ug/kg	468143	ujulia	[<u>.</u>	5.8E-004	mo/kg-dey		mg/kg-day	NVA	N/A	
	Benzo(b)fluoranthene	540875	upłą	540875	Lightig	M	6.5E-004	mg/kg-day	_	mg/kg-day	N/A	N/A	_
	Berzo(e)pyrene	428620	upłep	428620	ug/kg	M	5.1E-004	mg/kg-dey	-	mg/kg-day	N/A	N/A	_
	Indeno(1,2,3-cd)pyrene	147910	ug/kg	147910	upter	M	1.8E-004	mg/kg-day	_	mg/kg-day	N/A	N/A	_
	Olberzo(s,h)er@yscene	42438	uplep	42438	upto	M	5.1E-005	mg/kg-day	_	mg/kg-day	N/A	N/A	-
	Nephihalana	100988	upAg	100988	unden	M	1.2E-004	mg/kg-day	2.0E-002	mg/kg-day	N/A	N/A	6.1E-
	2-Methytraphthatera	496113	upAq	498113	unka	W	6.0E-004	mg/kg-dey	2.0E-002	mg/kg-day	N/A	N/A	3.0E-
	Acenaphilhane	355888	upfig	355888	upAq	M	4.3E-004	mg/kg-day	6.0E-002	mg/kg-day	N/A	N/A	1
	Dibereofuran	396113	uplep	396113	up/kg	M	4.8E-004	mg/kg-day	4.0E-003	mg/kg-day	N/A	N/A	7.1E-0
	Fluorene	583363	upAtp	583363	uplug	m	7.0E-004	mg/kg-day	4.0E-002	mg/kg-day	N/A	N/A	
	Rucrarthene	1833525	Lights	1833525	ug/kg	, m	2.2E-003	mg/kg-day	4.0E-002	mg/kg-day	N/A	N/A	1.8E-4
	Pyrene	1411478	upkg	1411478	uphp	<u> </u>	1.7E-003	mg/kg-day	3.0E-002	mp/kg-day	N/A	N/A	5.5E-4
	Methoxychlor	37714	uples	37714	upAq	M M	4.5E-005	mg/kg-day	5.0E-003	mp/kp-day	N/A		5.6E-
	Artimony	3.7	maka	3.7	mpAge	🖫	4.4E-006	mp/kg-day	4.0E-004	mg/kg-day	N/A	N/A N/A	9.1E-0
	Arseric	1 46 1	maka	46	mg/kg	🖫	5.5E-005	mg/kg-day	3.0E-004		N/A	N/A	1.1E-
	Copper	253	make	253	make	🖫	3.0E-004	mg/kg-day	4.0E-002	mg/kg-day			1.8E-0
	Manganese	239	mo/kg	239	mp/kp		2.9E-004	mg/kg-day	2.4E-002	mg/kg-day	N/A N/A	N/A N/A	7.6E-0
	Thellum	0.9	motes	0.9	moAco	, i	1.1E-006	mg/kg-day	7.0E-002	mg/kg-day	N/A		1.2E-0
	2inc	961	make	961	mg/kg	m	1.2E-003		7.0E-005 3.0E-001	mg/kg-day		N/A	1.5E-0
	(Total)				,,,,,,,,,		1.22-003	mg/kg-dey		mg/kg-day	N/A	N/A	3.9E-0
	Bersto(a)erdivacene	468143	uplig	468143	ug/kg	W	7.3E-005	mg/kg-day	-	mg/kg-day	ÑÆ	N/A	-
	Benzo(b)fluorardhene	540875	uphy	540875	ug/kg	M 1	8.4E-005	mg/kg-day	-	mg/kg-day	N/A	N/A	l _
	Berzo(s)pyrene	428620	uplep	426620	ug/kg	M	8.7E-005	mg/kg-day	_	mg/kg-day	N/A	N/A	l _
	Indeno(1,2,3-cd)pyrene	147910	upleg	147910	ugAg	M	2.3E-005	mg/kg-day	_	mg/kg-day	NA	N/A	l _
	Diberzo(a,h)antrecare	42438	upkg	42438	upAg	M	6.6E-006	mg/kg-day	-	mp/kp-day	N/A	N/A	l -
	Nephiniera	100968	Lightig	100988	upAg	M	1.6E-005	mg/kg-day	2.0E-002	mp/kg-day	N/A	N/A	7.9E-0
	2-Melhylmephihalene	498113	upleg	496113	ug/kg	M	7.8E-005	mg/kg-day	2.0E-002	mg/kg-day	N/A	N/A	3.9E-0
	Acensphilhens	355888	ugikg	355888	ug/kg	M	5.6E-005	mg/kg-day	8.0E-002	mg/kg-day	N/A	N/A	9 3E-0
	Olbenzoluren	306113	uptq	398113	Lightig	M	6.2E-005	mg/kg-day	4.0E-003	make-day	N/A	N/A	1.6E-0
	Ruorene	583363	ugikg	583363	LgAg	м	9.1E-005	mg/kg-dey	4.0E-002	mg/kg-day	N/A	N/A	2.3E-0
	Rustrathene	1633525	ughg	1833525	upleg	м	2.9E-004	mg/kg-day	4.0E-002	mg/kg-day	N/A	N/A	7.2E-0
	Pyrene	1411478	ug/kg	1411478	ug/kg	M	2.2E-004	maka-dey	3.0E-002	mg/kg-day	N/A	N/A	7.3E-
	Methoxychlor	37714	ugAg	37714	Lightg	M	4.5E-006	mg/kg-day	5.0E-003	mg/kg-day	N/A	N/A	9.1E-0
	Arilmony	3.7	mg/kg	3.7	mg/kg	M	4.4E-008	mg/kg-day	4.0E-004	mg/kg-day	N/A	N/A	1.1E-0
	Arseric	46	mg/kg	46	mate	M	1.7E-006	make-day	3.0E-004	mg/kg-day	N/A	N/A	5 5E-0
	Copper	253	mg/kg	253	mg/kg	M	3.0E-006	mg/kg-day	4.0E-002	mg/kg-day	N/A	N/A	7.8E-0
	Manganese	230	mg/kg	239	marke	M I	2.9E-008	mg/kg-day	2.4E-002	mg/kg-day	N/A	N/A	1 2E-0
	Thellum	0.9	maka	0.9	moleg	, iii	1.1E-008	mg/kg-day	7.0E-005	mg/kg-day	N/A	N/A	1.5E-0
	2mc	961	mg/kg	981	mg/kg	M	1.2E-005	mg/kg-day	3.0E-001	make-day	N/A	N/A	Į.
	(Total)					"			3.02-001	- Industrial	, •••	IWA	3.9E-0

⁽¹⁾ Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

⁽²⁾ Chronic.

⁻⁻ Reference Dose not available, therefore Hezerd Quotient not calculated. N/A - Not Applicable.

Scenario Timetrame Future
Medum: Building Materials
Exposure Medum: Building Materials
Exposure Point ACC 4 - ARC
Receptor Population: Construction Workers
Receptor Age: Adult

Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Royle EPC Value	Route EPC Units	Selected for Hazard	(Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reférence Concentration	Reférence Concentration Units	Halterd Qubtlent
pestion	to the second second			, 		Calculation (1)							To complete
	Aroctor-1254	30000	ugAg	30000	ugfký	_ M [3 6E-005	mg/kg-day	2 0E-005	mg/kg-day	N/A	N/A	1.82+000
	2,3.7,6-TCDD elquiv	17	ugfkg	17	ugfkg	M	2 0E-008	mg/kg-day	_	mg/kg-day	N/A	N/A	_
	Antimony	31700	mg/kg	31700	mg/kg	M	3 8E-002	mg/kg-day	4.0E-004	mg/kg-day	N/A	NA	9 58+001
	Arsenic	254	migrikg	254	mg/kg	м	3 0E-004	migRig-day	3.0E-004	mg/kg-day	N/A	N/A	1.08+000
	(Total)					i							9 88 4001
ritial			1			*			i			t	
	Aroctor-1254	30000	ugfkg	30000	ugfkg	M	6.7E-005	mg/kg-day	2.0€-005	mg/kg-day) NVA	NA	3.48+000
	2,3,7.8-TCDD elsulv.	17	ugfkg	17	ugfké	M	8.2E-009	mg/kg-day	_	mg/kg-day	N/A	N/A] -
	Antimony	31700	mg/kg	31700	mg/kg	M	5.1E-003	mg/kg-day	4 0E-004	mg/kg-day	NYA	NA	1 35+00
	Arsenic	254	mgAug	254	mg/kg	M	1.2E-004	mg/kg-day	3.0€-004	marke-day	N/A	N/A	4,1 £ -00
	(Total)				1			/		1	ŀ	l	1 68+00

(1) Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

(2) Chronic.

--- Reference Dose not available, therefore Hazard Quotient not calculated. N/A - Not Applicable.

TABLE 7.9.CT CALCULATION OF NON-CANCER HAZARDS CENTRAL TENDENCY EXPOSURE HORSESHOE ROAD COMPLEX SITE, SAYREVILLE, NEW JERSEY

Scenario Timeframe: Future Medium: Building Materials Exposure Medium: Building Materials Exposure Point: AOC 4 - ARC Receptor Population: Construction Workers Receptor Age: Adult

Exposure	Chemical	Medum	Medium	Roule	Route	EPC	irtales	Intake	Reference	Reference	Reference	Reference	Heumrd
Route	of Potential	EPC	EPC	EPC	EPC	Selected	(Non-Canoer)	(Non-Cancer)	Dose (2)	Dose Units	Concentration	Concentration	Quotieni
	Concern	Value	Units	Value	Units	for Hazard	ļ	Units		ļ	ļ	Units	
						Calculation (1)							
edion	 		 	2 - T - T - T - 1445-25T		TO THE SECTION			ran an talour				
	Arodor-1254	5500	ug/kg	5500	ug/kg) M	6.7E-006	mg/kg-day	2.0E-006	mg/kg-day	N/A	N/A	3.4E-00
	2,3,7,8-TCDD equiv.	3.2	ugfig	3.2	ugfig	M	3.8E-009	mg/kg-day	_	mg/kg-day	N/A	N/A	-
	Artimony	9017	mg/kg :	9017	mate	M	1.1E-002	mg/kg-day	4.0E-004	mg/kg-day	N/A	NA	2.7E+00
	Areanic	155	mgNg	155	mg/kg	M	1.9E-004	mgftg-day	3.0E-004	mpftq-day	N/A	N/A	6.2E-00
	(Tok	o)]]					2.8E+00
med						t 1				1			
	Aroctor-1254	5500	ugfig	5599	ugfig	M	1.3E-006	mg/kg-day	2.06-008	mg/kg-day	N/A	N/A	6.3E-00
	2,3,7,8-TC00 eq.év.	3.2	upfler .	3.2	ughg	M	1.5E-009	mg/kg-day	_	mg/kg-day	N/A	N/A	_
	Antimony	9017	mgftg	9017	mafea	M	1.4E-003	mg/kg-day	4.0E-004	mg/kg-day	N/A	N/A	3 6E+00
	Areenic	155	mg/kg	156	mg/kg	M	7.4E-005	mg/kg-day	3.0E-004	mg/kg-day	N/A	N/A	2.5E-00
	Class	ام	1 -		1		li de la companya de la companya de la companya de la companya de la companya de la companya de la companya de			1	1		4.5E+00

- (1) Medium-Specific (M) or Route-Specific (R) EPC selected for hazard oxiculation.
- (2) Chronic.
- -- Reference Dose not available, therefore Hazard Quotient not calculated.

Scenario Timeframe Future Medium: Surface Water Exposure Medium: Surface Water Exposure Point: AOC 5 - DSM Receptor Population: Residents Receptor Age Adult

Exposure	Cherrical	Medium	Medium	Route	Route	EPC	Irtake	Irtake	Reference	Reference	Reference	Reference	Hezerd
Route	of Potential	EPC	EPC	EPC	ÉPC	Stelected	(Non-Cancer)	(Non-Cencer)	Dose (2)	Dose Units	Concentration	Concentration	Quotient
	Concern	Value	Urits	Value	Units	for Hazerd Calculation (1)		Units				Urits	
ingestion	Arseric	0.589	mol	0.569	ingl	и	6 5E-005	mg/kg-day	3 0E-004	mg/kg-day	NĪĀ.	N/A	2 3 E 001
	Manganese	1.19	mg/	1 19	mg#	M	1 4E-004	mg/kg-day	2 4E-002	mg/kg-day	N/A	N/A	6 0E-003
	(Total)								l				2 3E 001
Dermal	Arseric	0 569	mg/l	0 569	mgi	M	3 2E-005	mg/kg-day	3 0E-004	mg/kg-day	N/A	N/A	1 1E-001
	Manganese	1.19	mg/l	1 19	mpl	м	6.7E-005	mg/kg-day	2 4E-002	mg/kg-day	N/A	N/A	2.8E-003
	(Total)				_	j .	1		ì			!	1.1E-001

(1) Medium-Specific (M) or Route-Specific (R) EPC selected for hezerd calculation.

(2) Citraric

--- Reference Dose not available, therefore Hazard Quotient not calculated.

N/A - Not Applicable

Scenario Timeframe Future
Medum. Surface Water
Exposure Medium. Surface Water
Exposure Point. AOC 6 - RR
Receptor Population: Residents

Exposure	Chemical	Medium	Medium	Route	Route	EPC	Intake	Intake	Reference	Reference	Reference	Reference	Hazerd
Route	of Potential	EPC	EPC	EPC	EPC	Selected	(Non-Cancer)	(Non-Cancer)	Dose (2)	Dose Units	Concentration	Concentration	Quotient
	Concern	Value	Units	Value	Units	for Heaserd		Units		ì	1	Units	
		Ì	Ì			Galculation (1)		1		}	1	1	Ì
estion	Aluminum	231	mgf	231	mgri	W	2 8E-004	mg/kg-day	1 0E+000	mg/kg-day	NEZ.	NVA -	2 8E-004
	Antimony	0.0057	mgA	0 0057	mg/l	M	6 8E-007	mg/kg-day	4.0E-004	mg/kg-day	N/A	N/A	1 7E-003
	Arsenic	0.02	mg/l	0.02	mg/l	M	2 4E-006	mg/kg-day	3 0E-004	mg/kg-day	N/A	N/A	8 OE-003
	Copper	0.249	mgf	0 249	mgfl	M	3.0E-005	mg/kg-day	4.0E-002	mg/kg-day	NA	N/A	7.5E-004
	Manganese	0.101	mgf	0 101	mg/l	M	1.2E-005	mg/kip-day	2.4E-002	mg/kg-day	NA	N/A	5 1E-004
	Thellium	0.005	mgri	0 005	mg/l	M	6 0E-007	mg/kg-day	7 0E-005	mg/kg-day	N/A	N/A	8 6E-003
	Vanadurh	0.0188	mg/l	0.0186	mg/l	M	2.2E-008	mg/kg-day	7 0E-003	mg/kg-day	N/A	N/A	3.2E-004
	σ	otal)			l		l	i		L			2 0E-002
nel	Aluminum	2.31	mgf	2 31	mgf	M	1 3E-004	mg/kip-day	1.0E+000	mg/kg-day	N/A	N/A	1.3E-004
	Antimony	0 0057	mgf	0.0057	mgf	M	3.2E-007	mg/kg-day	4.0E-004	mg/kg-day	N/A	N/A	8 0E-004
	Arsenic	0.02	mgf	0.02	mg/l	M	1.1E-008	mg/kg-day	3.0E-004	mg/kg-day	N/A	N/A	3.7E-003
	Copper	0.249	mgf	0 249	mg/l	M	1 4E-005	mg/kg-day	4.0E-002	mg/kg-day	N/A	N/A	3 5E-00-
	Manganese	0.101	mgri	0 101	mg/l	M	5 7E-008	mg/kg-day	2.4E-002	mg/kg-day	N/A	N/A	2 4E-004
	Thellum	0.005	mg#	0 005	mgf	M	2 8E-007	mg/kg-day	7.0E-005	mg/kg-day	N/A	N/A	4 0E-00:
	Variedium	0.0186	mg#	0.0186	mg/i	M	1.0E-008	mg/kg-day	7.0E-003	mg/kg-day	N/A	N/A	1 5E-004

(1) Medium-Specific (M) or Route-Specific (R) EPC selected for hexard calculation.

(2) Chronic

- - Reference Dose not available, therefore Hazard Quotient not calculated.

N/A - Not Applicable.

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TABLE 7.11 RME CALCULATION OF NON-CANCER HAZARDS REASONABLE MAXIMUM EXPOSURE HORSESHOE ROAD COMPLEX SITE, SAYREVILLE, NEW JERSEY

Scenario Timeframe Fulure
Medium Surface Water
Exposure Medium Surface Water
Exposure Point: ACC 5 - DSM
Recoptor Population Residents
Recaptor Age. Child

(f.:	The state of the second		F = = 1			1	i	i ·	i san	ř · · · ·	i		· · · ·
Exposure	Chemical	Methum	Medium	Route	Route	EPC	Irtoke	Irtake	Reference	Reference	Reference	Reference	Hezerd
Route	of Potential	EPC	EPC	EPC	ÉPC	Stelected	(Non-Cancer)	(Non-Cancer)	Dose (2)	Dose Units	Concentration	Concentration	Quotiênt
	Concern	Value	Units	Value	Units	for Hazard		Units		Į		Units	
!						Calculation (1)			Į.				
[l I							J	l <u></u>	l	
ingestion	Arseric	0.569	mg/l	0 569	mg/l	[W	3 2E 004	mg/kg-day	3 0E-004	mg/kg-day	NZ/Ā	N/A	1.1E+000
ļ	Manganese	1.19	mg/f	1 19	mg/l	M	6.8E-004	mg/kg-day	2 4E-002	mg/kg-day	N/A	N/A	2.8E-002
	(Totel)		\			l I	l	ļ	1	1			1 1E+000
Dermal	Arseric	0.569	mg/l	0 569	mg/l	M	5.2E-005	mg/kg-day	3 0E 004	mg/kg-day	N/A	` N/Å =	1.7E-001
i i	Manganese	1,19	mg/l	1.19	mg/l	M	1 1E-004	mg/kg-day	2 4E-002	mg/kg-day	N/A	N/A	4.5E-003
	(Total)		l [<u></u>			L	l			1 8E-001
					C : (100=23.13=)		· · · · · · · · · · · · · · · · · · ·			Total Hazard Inde	x Across All Exposure	Routes/Pathways	1 3E+000

(1) Medium-Specific (M) or Route-Specific (R) EPC selected for hezard calculation.

(2) Citoric

-- Reference Dose not available, therefore Hazard Quotient not calculated N/A - Not Applicable

Scenario Timeframe Future
Medium Surface Water
Exposure Medium: Surface Water
Exposure Point AOC 6 - RR
Receptor Population: Residents
Receptor Ann Child

Exposure	Chemical	Medium	Medium	Route	Route	EPC	intake	Intike	Reference	Reference	Reference	Reference	Hazerd
Route	of Potential	EPC	EPC	EPC	EPC	Selected	(Non-Cancer)	(Non-Cancer)	Dose (2)	Dose Units	Concentration	Concentration	Quotiént
	Concern	Value	Units	Value	Units	for Hezerti	ł	Units		i		Units	ļ.
						Calculation (1)	ļ						
stion	Aluminum	<u>7</u> 31	mg/l	231	mgA	м	1.3E-003	mg/kg-day	1 0E+000	mg/kg-day	NVA	NVA	1 3E-003
	Aritimony	0.0057	mg/l	0.0057	mg#	M	3.2E-008	mg/kg-day	4 0E-004	mg/kg-day	NA	NA	8 1E-003
	Arsenic	0.02	mg/l	0.02	mg/t	M	1 1E-005	mg/kg-day	3.0E-004	mg/kg-day	N/A	N/A	3 8E-00
	Copper	0.249	mgri	0 249	mg/t	M	1 4E-004	mg/kg-day	4.0E-002	mg/kg-day	NA	N/A	3 5E-00
	Mangenese	0 101	mg/l	0.101	mg/l	M	5.8E-005	mg/kg-day	2 4E-002	mg/kg-day	N/A	NA	2 4E-00
	Thelium	0.005	Ngm	0.005	mg/l	M	2.9E-006	mg/kg-day	7 0E-005	mg/kg-day	N/A	N/A	4.1E-002
	Vanadum	0.0186	mgA .	0.0186	mg/l	M	1 1E-005	mg/kg-day	7.0E-003	mg/kg-day	N/A	N/A	1.5E-00:
	(Tol												9 6E-00
mel	Aluminum	231	mgf	2 31	mgf	M	2.1E-004	mg/kg-day	1 0E+000	mg/kg-day	NVA	NVA	2 1E-00
	Antimony	0.0057	mg/f	0.0057	mgf	M	5.2E-007	mg/kg-day	4.0E-004	mg/kg-day	N/A	N/A	1.3E-00
	Arsenic	0.02	mg/f	0.02	mg/f	M	1.8E-006	mg/kg-day	3.0E-004	mg/kg-day	N/A	N/A	6.1E-00
	Copper	0.249	mg/f	0.249	mgf	м	2 3E-005	mg/kg-day	4.0E-002	mg/kg-day	N/A	N/A	5 7E-00
	Manganese	0.101	mgf	0 101	mgf	M	9.2E-006	mg/kg-day	2.4E-002	mg/kg-day	N/A	N/A	3 8E-00
	Thallum	0.005	mg/l	0.005	mgf	M	4 6E-007	mg/kg-day	7.0E-005	mg/kg-day	NA	N/A	6 5E-00
	Vanadum	0.0186	mgf	0.0186	mgf	M	1 7E-008	mg/kg-day	7.0E-003	mg/kg-day	N/A	NA	2.4E-004

(1) Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

(2) Chronic

--- Reference Dose not available, therefore Hezard Quotient not calculated.

N/A - Not Applicable.

Explosure Medium: Sedment Exposure Point AOC 5 - DSM Receptor Population: Residents Reseptor Age: Adult

Exposure	Chemical	Medum	Medium	Route	Route	EPC	Intaké	intake	Reference	Reference	Reference	Reference	Heamed
Route	of Potential	EPC	EPC	EPC	EPC	Selected	(Non-Caricer)	(Non-Cancer)	Dose (2)	Dose Units	Concentration	Concentration	Quotient
	Concern	Value	Units	Value	Units	for Hazard		Units		ŀ		Unite	
		1				Calculation (1)							
pestion	Beriac(a)enthracene	386	ugikg	300	ughq	u	2 8E-006	mg/kg-day		mg/kg-day	NVA	NA	 -
	Benzo(b)fluoranthene	730	ug/kg	730	ugfkg	м	6.9E-008	mg/kg-day	-	mg/kg-day	N/A	N/A	_
	Benzo(a)pyrene	300	ugfig	300	ugfkg	M	2.8E-008	mg/kg-day	-	mg/kg-day	N/A	NA	-
	Indeno(1,2,3-cd;pyrene	220	ugfkg	220	ug/kg	M	2.1E-008	mg/kg-day	_	mg/kg-day	N/A	NVA	
	Aroclor-1254	470	ug/kg	470	ugfkg	M	4.4E-008	mg/kg-day	2.0E-005	mg/kg-day	N/A	N/A	2.2E-003
	Arsenio	4030	mg/kg	4030	mg/kg	M	3.8E-004	mg/kg-day	3.0E-004	mg/kg-day	N/A	N/A	1.3E+000
	(Total	0								1	i		1.3E+000
rmei	Berizo(a)anthracene	300	ug/kg	300	ugfig	M	9.4E-008	mg/kg-day		mg/kg-day	N/A	NVA	
	Benzo(b)Buorárdhene	730	ugfig	730	ugfkg	м	2.3E-007	mg/kg-day	-	mg/kg-day	N/A	N/A	_
	Benzo(s)pyrehe	300	ugfig	300	ugfkg	M	9.4E-008	mg/kg-day	-	mg/kg-day	NA	N/A	_
	Indano(1,2,3-cd)pyrene	220	ugfkg	220	ugfkg	M	6.9E-008	mg/kg-day	-	mg/kg-day	N/A	N/A	_
	Arodor-1254	470	ug/kg	470	ugfkg	M	1 6E-007	mg/kg-day	2 0E-005	mg/kg-day	N/A	NA	7 9E-003
	Arsenic	4030	mg/kg	4030	ugfig	M	2.9E-004	mg/kg-day	3 0E-004	mg/kg-day	N/A	N/A	9.7E-001
	(Tota	0				I		anarasiy wasanan ininasiy		1			9 8E-001

(1) Medium-Specific (M) or Route-Specific (R) EPC selected for hazard delcutation.

(2) Chronie.

~ - Reference Dose not available, therefore Hazard Quotient not calculated.

N/A - Not Applicable.

TABLE 7.12.CT CALCULATION OF NON-CANCER HAZARDS CENTRAL TENDENCY EXPOSURE HORSESHOE ROAD COMPLEX SITE, SAYREVILLE, NEW JERSEY

Scenario Timetame: F.A.re
Medum: Sedmert
Exposure Medum: Sedmert
Exposure Point: AOC 5 - DSM
Receptor Population: Residents
Receptor Age: Ad.S.

Expos.re	Chemical	Medum	Medium	Route	Route	EPC	irtaice	Inteke	Reference	Reference	Reference	Reference	Hezerd
Route	of Potential	EPC	EPC	EPC	EPC	Selected .	(Non-Cencer)	(Non-Cancer)	Dose (2)	Dose Units	Concentration	Concentration	Quotent
	Concern	Value	Urite	Value	Urits	for Hezerd	i	Units				Urits	
						Calculation (1)				į			
geston	Berzo(a)ardiracene	500	ug/kg	500	upleg	и -	2.8E-006	mg/kg-day	·	mg/kg-day	N/A	N/A	
	Benzo(b)Buoranthene	407	Lipfig	407	ug/kg	M	3.8E-008	mg/kg-day	-	mg/kg-day	NA	N/A	-
	Benzo(s)pyrene	300	Lipto	300	upfig) M	2.6E-008	mg/kg-day	-	mg/kg-day	N/A	N/A	-
	Indeno(1,2,3-cd)pyrene	220	upfer	220	upAg	M	2.1E-008	moftg-day	-	mg/kg-day	NA	N/A	_
	Arodor-1254	387	ug/kg	387	ug/kg	M	3.6E-006	mg/kg-dey	2.0E-005	mg/kg-day	NA	N/A	1.8€-003
	Arseric	1917	mg/kg	1917	mg/kg	M	1.8E-004	mg/kg-day	3.0E-004	mg/kg-day	NA	N/A	6.0E-001
	(Total)												8.0E-001
ermal	Berzo(a)er#racere	300	uplup	300	ugAg	. M	9.4E-006	mg/kg-day		mg/kg-day	NA	NA	- 1
	Berizo(b)fluorardhene	407	upkg	407	ug/kg	M	1.3E-007	mg/kg-day	ì -	mg/kg-day	N/A	N/A	-
	Berzo(s)pyrene	300	upho	300	ug/kg	M	9.4E-006	mg/kg-day	-	mg/kg-day	N/A	N/A	-
	Indeno(1,2,3-cd)pyrene	220	upkg	220	ug/kg	M	6.9E-006	mg/kg-day	-	mg/kg-day	N/A	N/A	-
	Arodor-1254	387	upfep	387	ug/kg	M	1.3E-007	mg/kg-day	2.0E-005	mg/kg-day	N/A	N/A	6.5E-003
	Arseric	1917	make	1917	ug/kg	M	1.4E-004	mg/kg-day	3.0E-004	mg/kg-day	NA	N/A	4.6E-001
	(Total)									1		ľ	4.7E-001

- (1) Medium-Specific (M) or Route-Specific (R) EPC selected for hezard calculation.
- (2) Civaric.
- - Reference Dose not available, therefore Hazard Quotient not calculated. N/A Not Applicable,

Scenario Timefraine Future
Medium: Sediment
Exposure Medium: Sediment
Exposure Point AOC 6 - RR
Receptor Population: Residente
Receptor Ags: AdJR

Exposure	Chemical	Medium	Medium	Route	Route	EPC	Intake	Intake	Reference	Reference	Reference	Reference	Heand
Route	of Potential	EPC	EPC	€PC	EPC	Selected	(Non-Cancer)	(Non-Cancer)	Dose (2)	Dose Units	Concentration	Concentration	Quotient
	Concern	Value	Units	Value	UMIs	for Hezerd		Units		1		Units	
	1			1		Calculation (1)			1		ĺ		
	. 1					<u> </u>			1	L		l	
ngestion		T]					1	T	1	I	T
	Arsenic	2200	mg/kg	2200	mg/kg	M	2.1E-004	mg/kg-day	3.0E-004	mg/kg-day	N/A	N/A	6.9E-001
	Copper	3560	mg/kg	3580	mg/kg	L M	3.3E-004	mg/kg-daty	4.0E-002	mg/kg-day	N/A	N/A	8 4E-003
	(Tota							1	i	İ	}	1	7 0E-001
Dermail	Arsenic	2200	mg/kg	2200	mg/kg	M	1.6E-004	mg/kg-day	3 0E-004	mg/kg-day	· · NVA	N/A	5 3E-001
	Copper	3560	mg/kg	3560	m g/k g		6.5E-005	mg/kg-dayi	4.0E-002	mg/kg-day	N/A	N/A	2 1E-003
		ato (1		1 1		1		1		1	5.3E-001

(1) Medium-Specific (M) or Route-Specific (R) EPC selected for hexard deliculation.

(2) Chronic.

 \sim - Reference Dose not available, therefore Hazard Quotient not calculated. N/A - Not Applicable.

TABLE 7.12 CT CENTRAL TENDENCY EXPOSURE REASONABLE MAXIMAM EXPOSURE HORSESHOE ROAD COMPLEX SITE, SAYREVILLE, NEW JERSEY

Scenario Timehama: Future Medium: Sedment Exposure Medium: Sedment Exposure Point: ACC 8 - RR Receptor Population: Residents

	Receptor Age: Actual												
Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Heard Calculation (1)	Intaks (Non-Cancer)	Intaks (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Inguistion	Arsenic Copper	460 1873	mg/kg mg/kg	450 1573	mg/kg mg/kg	M M	4.2E-005 1.5E-004	mgfig-day mgfig-day	3.0E-004 4.0E-002	mg/kg-day mg/kg-day	N/A N/A	N/A N/A	1.4E-001 3.7E-003
Dermut	(Total) Arsenic Copper (Total)	450 1573	mafka mafka	450 1573	mg/kg mg/kg	M M	3 2E-005 3.8E-005	mg/kg-day mg/kg-day	3.0E-004 4.0E-002	mg/kg-day mg/kg-day	N/A N/A	N/A N/A	1.46-001 1.16-001 9.46-004 1.16-001
المجرية بالجاجيا	The second secon	Property of the state of the st	L	1	t .		II		، چې دديد .	Total Hazard Inde	IX Across All Exposur	e Routes/Pathways	2.5E-001

(1) Medium-Specific (M) or Route-Specific (R) EPC selected for hexard autoutation.

(2) Cheonic.

--- Reference Dose not available, therefore Hazard Quotient not osiculated. NM - Not Applicable.

Scenario Timetrame Future Medium Sediment Exposure Medium: Sediment Exposure Point AOC 5 - DSM Receptor Population: Residents Receptor Age: Child

Exposure	Chemical	Medium	Medium	Route	Route	EPC	Intake	Intake	Reference	Reference	Reference	Reference	Heamrd
Route	of Potential	EPC	EPC	EPC	EPC	Selected	(Non-Cancer)	(Non-Cancer)	Dose (2)	Dose Units	Concentration	Concentration	Quotient
	Concern	Value	Units	Value	Units	for Hazard	}	Units	1			Units	}
						Calculation (1)							ŀ
estion	Benzo(s)anthracens	300	ug/leg	500	ug/kg	M .	2.6€-007	rig/kg-day		mg/kg-day	NA	NA	
	Benzo(b)fluoranthene	730	ugfkg	730	ugfkg	M	6 4E-007	mg/kg-day	-	mg/kg-day	N/A	N/A	1 -
	Benzo(#)pyrene	300	ugfig	300	ugfig	M	2 8E-007	mg/kg-day	-	mg/kg-day	NVA	N/A	Í -
	Indeno(1,2,3-cd)pyrene	220	ugfkg	220	ugfkg	M	1.9E-007	rhg/kg-dey	- '	mg/kg-day	NA	N/A	
	Aroclor-1254	470	ughq	470	ugfkg	м	4 1E-007	rhg/kg-day	2.0E-005	mg/kg-day	N/A	N/A	2 1E-002
	Arsenic	4030	mg/kg	4030	mg/kg	м	3.6E-003	mg/kg-day	3.0E-004	mg/kg-day	N/A	N/A	1.2E+001
	(Total)		1									İ	1.2E+001
rmel	Benzo(s)enthracene	300	ugfkg	300	ugfkg	M	2.7E-007	ring/kg-day		mg/kg-day	NA	NA	-
	Benzo(b)fluoranthene	730	ugfkg	730	ugfkg	M	6.8E-007	thgfkg-day	-	mg/kg-day	NA	NA	\ -
	Benzo(#)pyrene	300	ugfkg	300	ugfkg	M	2.7E-007	mg/kg-day	-	mg/kg-day	N/A	N/A	-
	Indeno(1.2,3-cd)pyrene	220	ugfkg	220	ugfkg	M	2.0€-007	rhg/kg-day	-	mg/kg-day	NA	N/A	-
	Arocior-1254	470	ug/kg	470	ugftg	M	4 8E-007	rhg/kg-day	2.0E-005	mg/kg-day	NA	N/A	2.3E-002
	Arsenic	4030	mg/kg	4030	ug/kg] M	8.5E-004	mg/kg-day	3.0€-004	mg/kg-day	NA	N/A	2 8E+000
	(Total)		1			l				İ		1	2 8E+000

(1) Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

(2) Chronic.

-- Reference Dose not available, therefore Hazard Quotient not calculated.

N/A - Not Applicable.

TABLE 7.13.CT CENTRAL TENDENCY EXPOSURE REASONABLE MAXIMUM EXPOSURE HORSESHOE ROAD COMPLEX SITE, SAYREVILLE, NEW JERSEY

Scenario Timelfame: Future
Medium: Sedment
Exposure Medium: Sedment
Exposure P-Mrt. AOC 5 - DSM
Receptor Population: Residents
Receptor Age: Child

Ефовьти	Chemical	Medium	Medum	Roule	Route	EPC	Irtake	irtake	Reference	Reference	Reference	Reference	Hazard
Route	of Potential	EPC	EPC	EPC	EPC	Selected	(Non-Cancer)	(Non-Cancer)	Dose (2)	Dose Units	Concentration	Concentration	Quotien
	Concern	Value	Uritia	Ved.m	Urits	for Hazerd		Unite		!		Urits	ŀ
			į i			Calculation (1)			1	1	,		ļ
peston	Berzo(a)er#vacene	300	up/mg	386	upylig		2.6E-007	mg/kg-day		mg/kg-day	NOA	N/A	
	Benzo(b)#uoranthene	407	uples	407	ug/kg	M	3.6E-007	mg/kg-day	_	mg/kg-day	N/A	N/A	-
	Berzo(s)pyrene	500	ugArg	300	ug/kg	M	2.6E-007	mg/kg-day	-	mg/kg-day	N/A	N/A	\ -
	Induno(1,2,3-cd)pyrene	220	ugAg	220	ug/kg	M	1.9E-007	mg/kg-day	-	mg/kg-day	N/A	N/A	_
	Arodor-1254	367	ug/kg	367	Lig/kg	M	3.4E-007	mg/kg-day	2.0E-005	mg/kg-day	N/A	N/A	1.7E-002
	Arseric	1917	mg/kg	1917	moArg	M	1.7E-003	mg/kg-day	3.0E-004	mg/kg-day	N/A	N/A	5.8E+00
	(Total	n}	. 1					1	l	ì	1 .	}	5.8E+00
rmel	Benzo(e)ertiracene	300	ug/leg	300	upkg	W	2.7E-007	mg/kg-day	T	mg/kg-day	N/A	N/A	-
	Benzo(b)fluorershene	407	ug/kg	407	ug/kg	M	3.7E-007	mg/kg-day	-	mg/kg-day	N/A	N/A	-
	Benzo(a)pyrene	300	ug/kg	300	ugArg	M	2.7E-007	mg/kg-day	l -	mg/kg-day	N/A	N/A	-
	Indeno(1,2,3-od)pyrene	220	ug/kg	220	ug/kg) M	2.0E-007	mg/kg-day	} -	mg/kg-day	N/A	N/A	-
	Arodor-1254	387	ug/kg	387	ug/kg	M	3.8E-007	mg/kg-day	2.0E-005	mg/kg-day	N/A	N/A	1.96-00
	Arseric	1917	mg/kg	1917	ug/kg	M	4.0E-004	mg/kg-day	3.0E-004	mg/kg-dey	N/A	N/A	1.3E+00

- (1) Medium-Specific (M) or Route-Specific (R) EPC selected for hezerd calculation.
- (2) Chronic.
- -- Reference Dose not available, therefore Hazard Quotient not calculated. N/A Not Applicable.

Soonerlo Timetrame Future Exposure Point AOC 6 - RR Receptor Population: Residente Receptor Age: Child

		Medum	Route	Route	EPC	Irtske	iniake	Reference	Reference	Reference	Reference	Hezerd
of Potential	EPC	EPC	EPC	EPC	Selected	(Non-Cancer)	(Non-Cancer)	Dose (2)	Dose Units	Concentration	Concentration	Quotiént
Concern	Value	Units	Value	Units	for Huzerd		Units			1	Units	
		1			Calculation (1)					1	İ '	
		II	i	<u></u>	1 Y				<u> </u>	1	1,	L
				Ţ	[[[Ī
senic	2200	mg/kg	2200	mg/kg	M	1 9E-003	mg/kg-day	3 0E-004	mg/kg-day	N/A	N/A	6.5E+000
pper	3680	mg/kg	3560	mg/kg	M	3.1E-003	mg/kg-day	4.0E-002	mg/kg-day	N/A	N/A	7.8E-002
(Total)		1	l	, I	1				1	1	1.	6.5E+000
senic	2200	mg/kg	2200	mg/kg	M	4 6E-004	mg/leg-day	3 0E-004	rng/kg-day	N/A	N/A	1.5E+000
pper	3660	mg/kg	3560	mg/kg	M	2.5E-004	mg/kg-day	4.0E-002	mg/kg-day	N/A	N/A	6 2E-003
(Total)		L	i i		1				L	l	<u> </u>	1.5E+000
**	per (Total) per (Total) per (Total)	per 2200 per 3660 (Total) per 2200 per 3660 (Total)	2200 mg/kg per 3680 mg/kg mg/kg	per 2200 mg/kg 2200 per 3690 mg/kg 3560 (Total) onle 2200 mg/kg 2200 per 3690 mg/kg 3560	per 2200 mg/kg 2200 mg/kg per 3680 mg/kg 3560 mg/kg (Total) onle 2200 mg/kg 2200 mg/kg per 3680 mg/kg 3500 mg/kg	Calculation (1)	Calculation (1)	Calculation (1) Calculation (1) Calculation (1) Calculation (1) Calculation (1) Calculation (1) Calculation (1) Calculation (1) Calculation (1) Calculation (1) Calculation (1) Calculation (1) Calculation (1) Calculation (1) Calculation (1) Calculation (1)	Calcutation (1) Calcutation (1) Calcutation (1) Calcutation (1)	Calculation (1) Calculatio	Calculation (1)	Calculation (1)

(1) Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

(2) Chronic.

--- Reference Dose not available, therefore Hexard Quotient not calculated.

N/A - Not Applicable.

TABLE 7.13.CT CALCULATION OF NON-CANCER HAZARDS CENTRAL TENDENCY EXPOSURE HORSESHOE ROAD COMPLEX SITE, SAYREVILLE, NEW JERSEY

Exposure Point: AOC 6 - RR Receptor Age: Child

1		mare marrow		1	i i	ı	r ett i e	r ·	i ·	1	r i taman anan		
Exposure	Chemical	Medium	Medium	Route	Route	€PC	intake	Intelle	Reference	Reference	Reference	Reference	Heamrd
Route	of Potential	EPC	EPC	EPC	EPC	Selected	(Non-Cancer)	(Non-Cancer)	Dose (2)	Dose Units	Concentration	Concentration	Quotient
	Concern	Value	Unite	Value	Units	for Hezard		Unite				Units	
1						Calculation (1)			İ		ļ	3,3,2	
Ingestion	v i vidertiineinii						w .					see ees	
	Arsenic	480	mg/kg	450	mg/kg	м	4.0E-004	mg/kg-day	3.0E-004	mg/kg-day	N/A	N/A	1.3E+000
I .	Copper	1573	mg/lig	1573	mafta	м	1.4E-003	mg/kg-day	4.0E-002	mg/kg-day	N/A	N/A	3.5E-002
	(Total)]	Ì	1			1.4E+000
Dermal	Arsanio	450	mg/kg	450	mgAcq	M	9.5E-005	mg/tg-day	3.0E-004	mg/kg-day	ÑÁ	NA	3.2E-001
i .	Copper	1573	mg/kg	1573	mg/kg	м	1.1E-004	mg/kg-day	4.0E-002	mg/kg-day	N/A	NA	2.8E-003
I and the second	(Total)								l		}	1	3.2E-001
								Tale 17 a 17	TO PERSON	Total Hazard Inde	n Across All Exposure	Routee/Pathways	1.7E+000

Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.
 Chronic.

~ - Reference Dose not available, therefore Hazard Quotient not calculated. N/A - Not Applicable.

Scenario Timeframe Current and Future Medium, Soll Exposure Medium: Surface Soll Exposure Point: AOC 1 - HRDD

Receptor Population: Area Residents (Trespessors)

Receptor Age: Youth (12-17 years)

Exposure	Chemical	Medium	Medium	Route	Route	EPC	Make	Irtake	Cancer Slope	Cencer Sidpe	Cancer
Route	of Poter#al	EPC	EPC	EPC	EPC	Selected	(Clancer)	(Cancer)	Factor	Dose Units	Risk
	Concern	Value	Units	Value	Lirite	for Hezerd		Urits			ŀ
]			Calculation (1)	3	ĺ])
gestion	Dielon	120	ug/kg	120	ugkig	w	6.1E-010	mg/kg-day	1 6E+001	mg/kg-day	9 6E-009
	Arodor-1248	9500	ug/kg	9500	ug/kg	M	4.8E-008	mg/kg-dwy	2.0E+000	mg/kg-day	9 7E-008
	Arodor-1254	850	ug/kg	850	ug/kg	M	4 3E-009	mg/kg-day	2 0E+000	mg/kg-day	8 7E-009
	Aroder-1260	720	ugAkg	720	ug/kg	M	3 7E-009	mg/kg-day	2 0E+000	mg/kg-day	7.3E-009
	Aluminum	14250	mg/kg	14250	mg/kg	M	7.3E-005	mg/kg-day	-	mg/kg-day	_
	Antimony	3.4	mg/kg	34	mg/kg	M	1.7E-008	mg/kg-day) - i	mg/kg-day	! -
	Arseric	53	mg/kg	53	mg/kg	M	2 7E-007	mg/kg-dey	1 5E+000	mg/kg-day	4.1E-007
	Cedmium	45	mg/kg	4.5	mg/kg	M	2 3E-008	mg/kg-dey	-	mg/kg-day	-
	Copper	433	mg/kg	433	mg/kg	M	2 2E-008	mg/kg-day	-	mg/kg-day	-
	Manganese	420	mg/kg	420	mgArg	M	2 1E-006	mg/kg-dey	-	mg/kg-dey	-
	Nickel	108	mg/kg	106	mg/kg	M	5 5E-007	mg/kg-day	-	mg/kg-day	-
	Silver	30	mgArg	30	mg/kg	M	1 5E-007	mg/kg-day	-	mg/kg-day	-
	Thellum	1 1	mg/kg	1	mg/kg	M	5.1E-009	mg/kg-day	-	mg/kg-day	-
	Veredium	64	mg/kg	64	mg/kg	M	3.3E-007	mg/kg-day	-	mg/kg-day	
	(Tate				†		i		1		5.3E-00
ermel	Dieldin	120	ug/kg	120	ug/kg	M	1 6E-009	mg/kg-dey	1 6E+001	mg/kg-day	2.5E-008
	Arodar-1248	9500	ug/kg	9500	ug/kg	M	1 7E-007	mg/kg-day	2.0E+000	mg/kg-day	3 5E-00
	Arodar-1254	850	ug/kg	850	ug/kg	M .	1 5E-008	mg/kg-day	2.0E+000	mg/kg-day	3.1E-006
	Arodor-1260	720	ug/kg	720	ugAkg	M	1 3E-008	mg/kg-day	2 0E+000	mg/kg-day	2 6E-00
	Aluminum	14250	mg/kg	14250	mg/kg	M	1 9E-005	mg/kg-day	-	mg/kg-day	-
	Artimorry	3.4	rng/kg	34	mg/kg	M	4 4E-009	mg/kg-day	-	mg/kg-day	-
	Arseric	53	mg/kg	53	mg/kg	M	2 1E-007	mg/kg-day	1.5E+000	mg/kg-day	3 1E-00
	Cedmium	4.5	mg/kg	4.5	mg/kg	M	5 9E-010	mg/kg-dey	-	mg/kg-day	-
	Copper	433	mg/kg	433	mg/kg	M	5 6E-007	mg/kg-day	-	mg/kg-day	
	Manganese	420	mg/kg	420	mg/kg	M	5 5E-007	mg/kg-day	-	mg/kg-day	_
	Nickel	108	mg/kg	108	mg/kg	M	1 4E-007	mg/kg-day		mg/kg-day	-
	Silver	30	mg/kg	30	mg/kg	M	3.9E-008	mg/kg-day	-	mg/kg-day	-
	Thellium	1	mg/kg	1	mgAtg	M	1.3E-009	mg/kg-day	-	mg/kg-day	-
	Venedium	64	mg/kg	84	mgAtg	M	8 3E-008	mg/kg-day	-	mg/kg-day	7.4E-00

⁽¹⁾ Medium-Specific (M) or Roule-Specific (R) EPC selected for hazard calculation

⁻⁻ Cancer Stope Factor not available, therefore Cancer Risk not calculated N/A - Not Applicable

Scenario Timefame: Current and Future Medium: Sali Exposure Medium: Surface Soil Exposure Point: ACC 2 - ADC Receptor Population: Area Residents (Trespessers) Receptor Age: Youth (12-17 years)

Exposure	Cherrical	Medum	Medium	Raute	Route	EPC	Intake	Intelce	Cancer Slope	Cancer Slope	Cence
Route	of Potertial	EPC	EPC	EPC	EPC	Selected	(Cancer)	(Cancer)	Fector	Dose Units	Risk
	Concern	Value	Urits	Value	Units	for Hazard	' '	Units		0000 01115	740
				1		Calculation (1)					
ed on	Bermo(a)arifracerie	21000	uoko	21000	ug/kg		1.1E-007	mg/kg-dey	7.3E-001	mg/kg-day	7.5E-00
	Berzo(b)fluorenthene	30000	up/kg	30000	ug/kg	M	1.5E-007	mg/kg-day	7.3E-001	mg/kg-day	1.1E-00
	Beraro(s)pyrene	20000	ug/kg	20000	uptop	M	1.0E-007	mg/kg-day	7.3E+000	mg/kg-day	7.4E-00
	Indeno(1,2,3-cd)pyrene	12000	upAq	12000	us/kg	M	8.1E-008	mg/kg-day	7.3E-001	mg/kg-day	4.5E-00
	Dibergo(s./h)er@recene	2300	upArp	2300	upitg	M	1.2E-008	mg/kg-day	7.3E+000	mg/kg-day	8.6E-00
	Aldrin	400	uphy	400	ug/kg	M	2 0E-009	mg/kg-day	1.7E+001	mg/kg-day	3.5E-00
	Cleidin	740	ug/kg	740	ug/kg	M	3.8E-009	mg/kg-day	1.6E+001	mg/kg-day	6.0E-00
•	Methoxychiar	980000	upfig	980000	ug/kg	M	5.0E-006	mg/kg-day	-	mg/kg-day	-
	Arodor-1248	34000	upAg	34000	ug/kg	M	1.7E-007	molko-day	2.0E+000	marka-day	3.5E-00
	Arodor-1280	2500	ugAcg	2500	upAg	M	1.3E-008	mg/kg-day	2.0E+000	marka-day	2.6E-00
	2,3,7,8-TCDD equiv.	0.308	ug/kg	0.308	ug/kg	M	1.6E-012	maka-day	1.5E+005	marka-day	2.4E-00
	Artimony	32	mg/kg	32	mg/kg	M	1.6E-007	mg/kg-day	_	marka-day	
	Arsenic	3840	mg/kg	3640	mgArg	M	1.9E-005	mg/kg-day	1.5E+000	maka-dey	1.2E-00
	(Total		1								1.4E-00
Tall	Berzo(e)er#recene	21000	ug/kg	21000	ug/kg	M	3.5E-007	mg/kg-day	7.3E-001	mp/kg-day	2.6E-00
	Benzo(b)Ausranthere	30000	ug/kg	30000	ugArg	M	5.1E-007	mg/kg-dey	7.3E-001	mg/kg-day	3.7E-00
	Bereo(a)pyrene	20000	ug/kg	20000	ug/kg	M	3.4E-007	mg/kg-day	7.3E+000	mg/kg-dey	2.5E-00
	Indeno(1,2,3-cd)pyrene	12000	ug/kg	12000	upArg	M	2.0E-007	mg/kg-day	7.3E-001	mg/kg-day	1.5E-00
	Dibergo(a,h)erthracene	2300	ug/kg	2300	Lipho	M	3.9E-008	mg/kg-day	7.3E+000	mg/kg-day	2.8E-00
	Aldrin	400	ugArg	400	upArp	M	5.2E-009	mg/kg-day	1.7E+001	mg/kg-day	8.8E-00
	Cleidin	740	ug/kg	740	up/kg	M	9.6E-009	mg/kg-day	1.6E+001	mg/kg-day	1.5E-00
	Methoxychiar	960000	ug/kg	980000	up/kg	M	1 3E-005	mg/kg-day		mg/kg-day	_
	Arodar-1248	34000	ug/kg	34000	Loko	M	6.2E-007	mg/kg-day	2.0E+000	mg/kg-day	1.2E-00
	Arodor-1260	2500	ug/kg	2500	upkg	M	4.6E-008	mg/kg-day	2.0E+000	mg/kg-day	9.1E-00
	2,3,7,8-TCDD eq./v.	0.308	ug/kg	0.306	ugAcg	M	1.2E-012	mg/kg-day	1.5E+005	mg/kg-day	1.8E-00
	Artimony	32	mgAgg	32	mg/kg	M	4.2E-006	mg/kg-day	-	mg/kg-day	_
	Americ	3640	mg/kg	3840	mg/kg	M	1.4E-005	mg/kg-day	1.5E+000	mg/kg-day	9.5E-00
	(Tota	0	1		1	1		1	I		1.5E-00

⁽¹⁾ Medium-Specific (M) or Route-Specific (R) EPC selected for hezerd calculation.

⁻⁻⁻ Cancer Slope Factor not evallable, therefore Cancer Risk not calculated. N/A - Not Applicable.

Scenario Timelame: Current and Future

Medium: Salt

Exposure Medium: Sufface Soll

Exposure Paint: AOC 3 - SPD

Receptor Pobulation: Area Residents (Trespassers)

Receptor Age: Youth (12-17 years)

Exposure	Cherrical	Medum	Medium	Roulte	Route	EPC	tráske	rteke	Cercer Stope	Cencer Slope	Cencer
Route	of Potertiel	EPC	EPC	EPC	EPC	Selected	(Cancer)	(Cancer)	Fector	Dose Units	Risk
	Concern	Value	Urils	Value	Urits	for Hazard		Units			
						Calculation (1)		1	ļ		
gesilan	Benzo(a)er@tacene	1781	ug/kg	1701	ug/kg	· · · · · · ·	8 7E 009	mg/kg-dary	7 3E-001	mg/kg-day	8 3E-00
	Bengo(b)Austerthene	2883	ug/kg	2883	ug/kg	M	1.5E-008	mg/kg-day	7 3E-001	mg/kg-day	1.1E-000
	Benzo(a)pyrena	1466	up/kg	1466	ug/kg	M	7.5E-009	mp/kg-day	7 3E+000	mg/kg-day	5.5E-00
	Indeno(1,2,3-cd)pyrene	1302	ug/kg	1302	ug/kg	M	6.6E-009	mg/kg-day	7.3E-001	mg/kg-day	4.8E-00
	Methoxychlor	850000	ug/kg	650000	ug/kg	[M]	3.3E-006	mg/kg-day	-	Ing/kg-day	_
	Aliminum	8432	mg/kg	8432	mg/kg	l M	4.3E-005	mg/kg-day	-	ing/kg-day	-
	Artimony	17	mg/kg	17	mg/kg	M	8.7E-008	mg/kg-day	-	Ing/kg-day	-
	Arsenic	24	mg/kg	24	mgAcg	M	1.2E-007	mg/kg-day	1.5E+000	mg/kg-day	1 8E-00
	Copper	1519	mg/kg	1519	mg/kg	M	7.7E-006	mg/kg-day	-	ing/kg-day	-
	Manganese	215	mg/kg	215	mg/kg	M	1.1 Ë-008	mg/kg-day	i -	mg/kg-dey	_
	Thellum	0.92	mg/kg	0.92	mg/kg	M	4.7E-009	mg/kg-day	-	Ing/kg-day	_
	Vanedum	37	mg/kg	37	mg/kg	M	1.9E-007	mg/kg-day	_	mg/kg-day	-
		(Total)		1		1		1	}		2 6E-00
ermal	Benzo(a)entitracene	1701	ug/kg	1701	ug/kg	M	2.9E-008	mg/kg-dey	7 3E-001	mg/kg-day	2.1E-00
	Benzo(b)fkutrenthene	2883	ug/kg	2883	ug/kg	M	4.9E-008	mg/kg-day	7.3E-001	Img/kg-day	3 6E-00
	Benzo(a)pyrene	1468	ug/kg	1468	ug/kg	M	2.5E-008	mg/kg-day	7 3E+000	mg/kg-day	1.8E-00
	Indeno(1,2,3-cd)pyrene	1302	ug/kg	1302	ug/kg	M	2.2E-008	mg/kg-day	7 3E-001	mg/kg-day	1 8E-00
	Methoxychlor	650000	⊔g/kg	650000	ug/kg	M	8 5E-006	mg/kg-day	-	mg/kg-dey	-
	Aluminum	8432	mg/kg	8432	mg/kg	M	1 1E-005	mg/kg-day	-	mg/kg-dey	-
	Antimony	17	mg/kg	17	mg/kg	M	2 2E-008	mg/kg-day	-	mg/kg-day	-
	Arsenic	24	mg/kg	24	mg/kg	M	9 4E-008	mg/kg-dey	1.5E+000	mg/kg-day	1 4E-00
	Copper	1519	mg/kg	1519	mg/kg	, м	2 0E-006	mg/kg-day		mg/kg-day	_
	Mangenese	215	mg/kg	215	mgAkg	M	2.6E-007	mg/kg-day	_	mg/kg-day	_
	Thellium	0.92	mg/kg	0 92	mg/kg	M	1 2E-009	mg/kg-day	_	mg/kg-day	-
	Venedium	37	mg/kg	37	mgAtg	M	4 8E-008	mg/kg-day	-	mg/kg-day	
	ļ.	(Total)		1		1		1		_	3 9€-00

⁽¹⁾ Medium-Specific (M) or Route-Specific (R) EPC selected for hezerd calculation.

^{- -} Carnoer Stope Factor not available, therefore Carnoer Risk not calculated N/A - Not Applicable

Scenario Timeframe. Current and Future

Medium: Soll

Exposure Mediunt: Surface Soil Exposure Point: AOC 4 - ARC

Receptor Population. Area Residents (Trespessors) Receptor Age: Youth (12-17 years)

Exposure	Chemical	Medium	Medium	Route	Route	EPC	Irlake	Irteke	Currer Slope	Cancer Slope	Cence
Route	of Potential	EPC	EPC	EPC	EPC	Selected	(Cencer)	(Cancer)	Factor	Dose Urits	Risk
	Concern	Velue	Units	Value	Urits	for Hezerd		Units	1		1
			ł	ļ		Calculation (1)					
pestion	Berzo(b) fluor préhiene	2800	ug/kg	2600	ug/kg	R	1 3E-008	mg/kg-dey	7.3E-001	mg/kg-day	9 7E-00
	Benzo(s)pyrene	1800	ug/kg	1800	u g/kg	(M (9.2E-009	mg/kg-day	7.3E+000	mg/kg-day	6 7E-00
	Hexachtorobusediene	6800	ug/kg	6800	ug/kg	M	3 5E-008	mg/kg-day	7 8E-002	mg/kg-day	2.7E-00
	Hexachtcrocyclopertediene	57440	ugAkg	57440	ug/kg	M	2.9E-007	mg/kg-day	_	mg/kg-day	
	Aldrin	22	ug/kg	22	ugArg	M	1.1E-010	mg/kg-day	1.7E+001	mg/kg-day	1.9E-00
	Arodor-1248	891	ug/kg	891	ugArg	M	4.5E-009	mg/kg-day	2.0E+000	mg/kg-day	9.1E-00
	Arodor-1254	1941	ug/kg	1941	ug/kg	(M [9.9E-009	mg/kg-day	2.0E+000	mg/kg-day	2 0E-00
	Aradar-1260	465	ug/kg	465	ug/kg	M	2.4E-009	mg/kg-dey	2.0E+000	mg/kg-day	4.7E-00
	2,3,7,8-TCDD equiv.	0.2	ugArg	0.2	ug/kg	M	1.0E-012	tng/kg-day	1.5E+005	mg/kg-day	1.5E-00
	Aluminum	15500	mg/kg	15500	mg/kg	•	7.9E-005	mg/kg-day	-	mg/kg-day	-
	Artimorty	16	mg/kg	18	mg/kg	M	9.2E-008	mg/kg-day		mg/kg-day	-
	Arseric	27	mg/kg	27	mg/kg	M	1.4E-007	mg/kg-day	1.5E+000	mg/kg-day	2.1E-00
	Cadmium	37	mg/kg	37	mg/kg	M	1 9E-007	mg/kg-day	-	mg/kg-day	
	Copper	591	mg/kg	591	mg/kg	M	3.0E-008	mg/kg-day	-	mg/kg-day	
	Manganese	461	mg/kg	481	mg/kg	M	2.4E-008	mg/kg-day	-	mg/kg-day	-
	Nickel	296	mg/kg	296	mg/kg	M	1 5E-008	mg/kg-day	-	mg/kg-day	-
	Silver	287	mg/kg	287	mg/kg	M	1.5E-008	mg/kg-day	-	mg/kg-day	-
	Theillum	0.72	mg/kg	0 72	mg/kg) M	3.7E-009	mg/kg-day	-	mg/kg-day	-
	Znc	9172	mg/kg	9172	mg/kg	M	4.7E-005	mg/kg-day	-	mg/kg-dey	
ermel	Benzo(b)Austranthane	2800	Ug/kg	2600	upArg	 	4.4E-008	mg/kg-day	7 3E-001	mg/kg-day	4 7E-00
	Benzo(n)pyrene	1800	U p Aq	1800	up/kg	M	3.0E-008	mg/kg-day	7 3E+000	ma/kg-day	2 2E-00
	Hexachicrobutedene	6800	ug/kg	6800	ug/kg	M	8.8E-008	mg/kg-day	7.8E-002	mg/kg-day	6 9E-00
	Hexaciforocydopertaciene	57440	up/kg	57440	up/kg	M	7.5E-007	mg/kg-day	-	mg/kg-day	
	Aldrin	22	ug/kg	22	ug/kg		2.9E-010	mg/kg-day	1 7E+001	mg/kg-day	49€-00
	Aradar-1248	891	ug/kg	891	up/kg	, M	1.6E-006	mg/kg-day	2 0E+000	mg/kg-day	3 2E-00
	Aradar-1254	1941	ug/kg	1941	upkg	M	3.5E-006	mg/kg-day	2.0E+000	mg/kg-day	7 1E-00
	Aradar-1280	465	ugArg	465	upkg	M	8.5E-009	mg/kg-day	2 0E+000	mg/kg-day	1 7E-00
	2.3.7.8-TCDD equiv.	0.2	ug/kg	0.2	ug/kg	M	7.8E-013	mg/kg-day	1 5E+005	mg/kg-day	1 2E-00
	Alentram	15500	maka	15500	maka	N N	2 0E-005	mg/kg-day	_	mg/kg-day	'-
	Artimony	18	тржо	18	mg/kg	M	2.3E-008	mg/kg-day	_	mg/kg-day	_
	Arseric	27	mg/kg	27	mg/kg	M	1 1E-007	mg/kg-day	1.5E+000	mg/kg-day	1 6E-00
	Cadmium	37	mg/kg	37	mg/kg	[m	4.8E-009	mg/kg-day		mg/kg-day	
	Copper	591	mg/kg	591	maka	M	7.7E-007	mg/kg-day	_	mg/kg-day	
	Manganesa	461	mg/kg	461	mg/kg	M	6 0E-007	mg/kg-dey		mg/kg-day	_
	Nickel	296	mg/kg	296	mg/kg	m	3 8E-007	mg/kg-dey	_	mg/kg-day	
	Silver	287	md/kg	287	ma/kg	M	3 7E-007	mg/kg-dey		mg/kg-day	_
	Thellium	0.72	mg/kg	0.72	mg/kg	M N	9 4E-010	mo/kg-day	_	make-day	
	Zinc	9172	mg/kg	9172	mg/kg	"	1 2E-005	mg/kg-day	_	mg/kg-day	

⁽¹⁾ Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

Scenario Timefranie. Current and Future
Medium Building Materials
Exposure Medium Building Materials
Exposure Point: AOC 2 - ADC
Receptor Population: Area Residents (Trespassers)
Receptor Age. Youth (12-17 years)

Exposure	Chemical	Medium	Medium	Route	Route	EPC	Intake	Intake	Cancer Stope	Cancer Slope	Cence
Houte	of Potential	EPC	EPC	EPC	EPC	Selected	(Cancer)	(Cancer)	Factor	Dose Units	Risk
	Concern	Value	Units	Value	Units	for Hazerd Calculation (1)		Units			•
gestion	Benzo(e)entracene	1100000	ug/kg	1100000	ug/kg		5 6E-006	mg/kg-day	7 3É-001	mg/kg-dey	4 1E-00
	Benzo(b)fluoranthene	1400000	ug/kg	1400000	ug/kg	M	7 1E-006	mg/kg-day	7 3E-001	mg/kg-day	5.2E-00
	Benzo(a)pyrene	1100000	ug/kg	1100000	⊔ д /к д	M	5.6E-006	mg/kg-day	7.3E+000	mg/kg-day	4 1E-00
	Indeno(1,2,3-cd)pyrene	300000	ugAkg	300000	ug/kg	M	1.5E-006	mg/kg-day	7.3E-001	mg/kg-day	1 1E-00
	Dibenzo(a,h)enfhracene	90000	ug/kg	90000	ug/kg	M	4 6E-007	mg/kg-day	7 3E+000	mg/kg-dey	3.4E-00
	Nephthalene	320000	ug/kg	320000	ug/kg	M	1.6E-006	mg/kg-day	-	mg/kg-day	-
	2-Methylnaphthalana	1100000	ug/kg	1100000	ug/kg	M	5.6E-006	mg/kg-day	-	mg/kg-day	
	Acenephinene	800000	ug/kg	800000	ug/kg	M	4.1E-006	mg/kg-day	_	mg/kg-day	-
	Dibenzofuran	1000000	ug/kg	1000000	ug/kg	M	5.1E-006	mg/kg-day	-	mg/kg-day	_
	Fluorene	1600000	ug/kg	1600000	ug/kg	M	8 2E-006	mg/kg-day	-	mg/kg-day	
	Fluoranthene	3900000	ug/kg	3900000	u g/kg	M	2.0E-005	mg/kg-day	-	mg/kg-day	_
	Pyrene	2800000	ug/kg	2800000	ugAtg	M	1.4E-005	mg/kg-day		mg/kg-day	-
	Methoxychlor	150000	ugAkg	150000	ug/kg	M	7.7E-007	mg/kg-day	-	mg/kg-dey	
	Antimony	5.7	mg/kg	57	mg/kg	M	2 9E-008	mg/kg-dey	-	mg/kg-dey	-
	Arsenic	84	mg/kg	84	mg/kg	M	4 3E-007	mg/kg-day	1 5E+000	mg/kg-day	6 4E-00
	Copper	495	mgAtg	495	mg/kg	M	2.5E-008	mg/kg-day	-	mg/kg-dey	_
	Manganese	495	mg/kg	495	mg/kg	M	2.5E-006	mg/kg-day	_	mg/kg-dey	_
	Thellum	1.8	mg/kg	1.8	mg/kg	M	9 2E-009	mg/kg-dey	-	mg/kg-day	-
	Zinc (Tota	3050 el)	mg/kg	3060	mg/kg	M	1.6E-005	mg/kg-day	-	mg/kg-day	5.5E-00
ermet	Benzo(a)enthracene	1100000	ug/kg	1100000	ug/kg	·	1.9E-005	mg/kg-day	7 3E-001	mg/kg-day	1 4E-00
	Benzo(b)fluoranthene	1400000	ug/kg	1400000	ug/kg	M	2.4E-005	mg/kg-dey	7 3E-001	mg/kg-dey	1 7E-00
	Benzo(a)pyrene	1100000	ugArg	1100000	ug/kg	M	1 9E-005	mg/kg-day	7.3E+000	mg/kg-day	1 4E-00
	Indeno(1,2,3-cd)pyrane	300000	ug/kg	300000	ug/kg	M	5 1E-006	mg/kg-day	7 3E-001	mg/kg-dey	3 7E-00
	Diberzo(a,h)enfiracene	90000	ug/kg	90000	ug/kg	M	1 5E-006	mg/kg-day	7.3E+000	mg/kg-day	1.1E-00
	Naphthelene	320000	ug/kg	320000	ug/kg	M	5 4E-006	mg/kg-day	_	mg/kg-day	_
	2-Methylnophthalene	1100000	ug/kg	1100000	ug/kg	M	1 9E-005	mg/kg-day	-	mg/kg-day	l _
	Acenephinene	800000	ug/kg	800000	ug/kg	M I	1 4E-005	mg/kg-day		mg/kg-dey	l _
	Dibenzofuran	1000000	ug/kg	1000000	ug/kg	l M	1 7E-005	rng/kg-day	_	mg/kg-day	1 _
	Fluorene	1600000	ug/kg	1600000	ug/kg	M	2.7E-005	mg/kg-day	_	mg/kg-day	<u> </u>
	Fluoranthene	3900000	ug/kg	3900000	ug/kg	M	6 6E-005	rngAtg-day	_	mg/kg-day	
	Pyrene	2800000	ug/kg	2800000	ug/kg	l w	4 7E-005	make-day	_	mg/kg-day	_
	Methoxychlor	150000	ug/kg	150000	ug/kg	M	2 0E-006	mg/kg-day		mg/kg-dey	_
	Antimony	5.7	mg/kg	5.7	mg/kg	M	7 4E-009	mg/kg-day	_	mg/kg-day	_
	Arsenic	84	mg/kg	84	mg/kg	M	3 3E-007	mg/kg-day	1 5E+000	mg/kg-day	4.9E-00
	Copper	495	mg/kg	495	mg/kg	M	6.4E-007	mg/kg-day		mg/kg-day	
	Manganese	495	mg/kg	495	mg/kg	M	6 4E-007	mg/kg-day	_	mg/kg-day	
	Thellium	18	mg/kg	18	mg/kg	M	2 3E-009	mg/kg-day		mg/kg-day	
	Zinc	3050	mg/kg	3050	mg/kg	M	4.0E-006	mg/kg-day		mg/kg-day	<u>~</u>
	(Total		····•···			1 "					1 8E-00

Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

TABLE 8.2.CT CALCULATION OF CANCER RISKS CENTRAL TENDENCY EXPOSURE HORSESHOE ROAD COMPLEX SITE, SAYREVILLE, NEW JERSEY

Scenario Timeframe: Current and Future Medium: Building Meterials

Exposure Medium: Building Meterlels

Exposure Point: AOC 2 - ADC Receptor Population: Area Residents (Trespessers)

Receptor Age: Youth (12-17 years)

Exposure	Chemical	Medium	Medium	Route	Route	EPC	irritaice	i Intake	Cancer Slope	Cencer Stope	Cancer
Route	of Potential	EPC	EPC	EPC	EPC	Selected	(Cancer)	(Cancer)	Factor	Dose Units	Risk
	Concern	Value	Units	Value	Units	for Hazard Calculation (1)	(,	Units		COOC ONLA	- Turk
gestion	Benzo(e)entracene	488143	ugág	468143	uglig		1.2E-006	mg/kg-day	7.3E-001	mg/kg-day	8.9E-00
	Benzo(b)fluoranthene	540875	upfeg	540875	uplig	"	1.4E-008	mg/kg-day	7.3E-001	mp/kg-day	1.0E-00
	Benzo(a)pyrene	426620	ugkg	426620	upkg		1.1E-006	mg/kg-day	7.3E+000	mg/kg-day	8.1E-00
	Indeno(1,2,3-cd)pyrene	147910	ug/kg	147910	ugAg	u I	3.8E-007	mg/kg-day	7.3E-001	mg/kg-day	2.6E-00
	Dibenzo(s,h)enthracene	42438	ug/kg	42438	ugAg	M	1.1E-007	mg/kg-day	7.3E+000	make-day	8.1E-00
	Nephthelene	100988	ugkg	100968	ugAq	M	2.6E-007	mg/kg-day	-	mg/kg-day	0.12-00
	2-Methylnephthelene	496113	ugAq	496113	ug/kg	N N	1.3E-006	mg/kg-day		mp/kg-day	_
	Acenephthene	365888	ug/kg	355888	ugAg	M	9.3E-007	mg/kg-day	_	mg/kg-day	1 -
	Dibenzoluren	396113	ug/kg	398113	ugkg	M	1.0E-008	mg/kg-day	_	mp/kg-day	i
	Fluorene	583363	ug/kg	583363	upleg	M	1.5E-006	mg/kg-day		mg/kg-day	
	Fluoranthene	1833525	ug/kg	1833525	ug/kg	M	4.8E-008	mg/kg-day	_	mg/kg-day	
	Pyrane	14111478	ug/kg	14111478	ug/kg	M	3.7E-006	mg/kg-day	_	mg/kg-day	_
	Methoxychior	37714	ugAg	37714	ug/kg	M J	9.8E-008	mg/kg-day	_	mg/kg-day	_
	Antimony	3.7	mg/kg	3.7	mg/kg	M	9.6E-012	mg/kg-day		mp/kg-day	_
	Arsenic	46	mg/kg	46	mg/kg	M	1.2E-010	mg/kg-day	1.5E+000	mg/kg-day	1.8E-0
	Copper	253	mg/kg	253	mg/kg	M	6.6E-010	mg/kg-day	_	mg/kg-day	
	Mangenese	239	mg/kg	239	mg/kg	M	6.2E-010	mg/kg-day	_	mg/kg-day	_
	Thellum	0.9	mg/kg	0.9	mg/kg	M	2.3E-012	maka-dev		mg/kg-day	_
	Zinc	961	mg/kg	981	mg/kg	M	2.6E-009	mg/kg-day	_ !	mg/kg-day	
	(Total		1	1		1 1		'''			1.1É-0
mel	Benzo(s)enthracene	468143	ug/kg	468143	ugAg	M N	7.9E-006	mg/kg-dey	7.3E-001	mg/kg-dey	5.8E-00
	Benzo(b)fluoranthene	540875	ug/kg	540875	ug/kg	M I	9.1E-006	mg/kg-day	7.3E-001	mg/kg-day	6.7E-00
	Benzo(a)pyrene	426620	ugkç	426620	ug/kg	M	7.2E-008	mg/kg-day	7.3E+000	mg/kg-day	5.3E-00
	Indeno(1,2,3-cd)pyrene	147910	ug/kg	147910	ugAg	M	2.5E-006	mg/kg-dey	7.3E-001	maka-dey	1.8E-00
	Olbenzo(e,h)enthrecene	42438	ug/kg	42438	ug/kg	M	7.2E-007	mg/kg-day	7.3E+000	mg/kg-day	5.2E-00
	Nephthelene	100988	ug/kg	100988	ug/kg	M	1.7E-006	mg/kg-day		mp/kg-dey	_
	2-Methylmophthalene	496113	ug/kg	498113	ug/kg	M	8.4E-006	mg/kg-day	l –	mg/kg-day	_
	Acenephthene	355888	ug/kg	355888	ugfig	M	6.0E-006	mg/kg-day	_	mg/kg-day	_
	Olbenzoluren	396113	ug/kg	398113	ugAg	M	6.7E-006	mg/kg-dey	_	mg/kg-day	_
	Fluorene	583363	ug/kg	583363	ugAg	M	9.9E-006	mg/kg-day	_	mg/kg-day	_
	Fluoranthene	1833525	ugAg	1833525	ugAg	M	3.1E-005	mg/kg-day	_	mg/kg-day	_
	Pyrene	14111478	ug/kg	14111478	ug/kg	M	2.4E-004	mg/kg-day	i	mg/kg-day	_
	Methaxychlor	37714	ugAg	37714	ug/kg	M	4.9E-007	mg/kg-day	_	mg/kg-day	_
	Antimony	3.7	mg/kg	3.7	mg/kg	M	4.8E-009	mg/kg-day		mg/kg-day	_
	Arsenic	46	mg/kg	46	mg/kg	M	1.8E-007	mg/kg-day	1.5E+000	mp/kg-day	2.7E-00
	Copper	253	mg/kg	253	mg/kg	M	3.3E-007	mg/kg-day	-	mg/kg-day	_
	Manganese	239	mg/kg	239	mg/kg	M	3.1E-007	mg/kg-day] -	mg/kg-day	_
	Theilium	0.9	mg/kg	0.9	mg/kg	M	1.2E-009	mg/kg-day	-	mg/kg-day	_
	Zinc	981	mg/kg	981	mg/kg	M	1.3E-006	mg/kg-day	-	mg/kg-day	_
	_ (Tota	0	1			1		I	1		7.2E-00

Scenario Timeframe: Current and Future

Medium: Building Meterials

Exposure Medium: Building Materials

Exposure Point: AOC 4 - ARC

Receptor Population: Area Residents (Trespessors)

Receptor Age: Youth (12-17 years)

Exposure	Chemical	Medium	Medium	Route	Route	EPC	intake	intake	Cancer Slope	Cancer Slope	Cancer
Route	of Potential	EPC	EPC	EPC	EPC	Selected	(Cancer)	(Cencer)	Factor	Dose Units	Risk
	Concern	Value	Units	Value	Units	for Hazard		Units			1
						Calculation (1)					
estion	. The state of the	मा क्रिकेट के किस के के के किस के किस के किस के किस के किस के किस के किस के किस के किस के किस के किस के किस के जिस्सी किस के किस के किस के किस के किस के किस के किस के किस के किस के किस के किस के किस के किस के किस के किस क]	·		entro	 	hartenski men	a rad ago en calen arios e	
	Aroclor-1254	30000	ug/kg	30000	ug/kg	м	1.5E-007	mg/kg-day	2.0E+000	mg/kg-day	3.1E-007
	2,3,7,8-TCDD equiv.	17	ug/kg	17	ug/kg	M	8.7E-011	mg/kg-day	1.5E+005	mg/kg-day	1.3E-000
	Antimony	31700	mg/kg	31700	mg/kg	M	1.6E-004	mg/kg-day	-	mg/kg-day) <u> </u>
	Areenic	254	mg/kg	254	mg/kg	M	1.3E-006	mg/kg-dey	1.5E+000	mg/kg-day	1.9E-008
	(Total)									'' '	1.5E-008
rmal				1 - 1			*				
	Arector-1254	30000	ug/kg	30000	ug/kg	M	5.5E-007	mg/kg-day	2.0E+000	mg/kg-day	1.1E-000
	2,3,7,8-TCDD equiv.	17	ug/kg	17	ug/kg	м	6.6E-011	mg/kg-day	1.5E+005	mg/kg-day	9.9E-006
	Antimony	31700	mg/kg	31700	mg/kg	M	4.1E-005	mg/kg-day	_	mg/kg-day	-
	Arsenic	254	mg/kg	254	mg/kg	M	9.9E-007	mg/kg-day	1.5E+000	mg/kg-day	1.5E-000
	(Total)	•		1	- -				1	•••	1.3E-000

⁽¹⁾ Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

^{- -} Cancer Stope Factor not available, therefore Cancer Risk not calculated. N/A - Not Applicable.

Scenario Timeframe: Current and Future

Medium: Surface Water

Exposure Medium: Surface Water Exposure Point: ADC 1 - HRDD

Receptor Population: Area Residents (Trespassers)

Receptor Age: Youth (12-17 years)

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Dose Units	Cancer Risk
gestion	Vinyi Chloride	0.004	mg/l	0.004	mg/l	 	1.0E-008	mg/kg-dilly	1 9E+000	mg/kg-day	2 0E-008
	Antimony	0.01	mg/fi	0.01	mg/i	M	2.8E-008	mg/kg-day	-	mg/kg-day	-
	Arsenic	0.0896	mg/l	0.898	mg/l	M	2.3E-007	mg/kg-day	1.5E+000	mg/kg-day	3 5E-007
	Cadmium	0 0085	mg/t	0 0085	rhg/l	M	2 2E-006	mg/kg-day		mg/kg-day	-
	Соррег	1.23	mgi/ī	1 23	rhg/I	M	3.2E-008	mg/kg-day	_	mg/kg-day	
	Manganese	1.03	mg/1	1 03	rhg/f	M	2 7E-008	mg/kg-daly	_	mg/kg-day	
	Nickel	0.144	mg/1	0.144	rhg/t	M	3.7E-007	mg/kg-daly	-	mg/kg-day	
	(Total	y .									3.7E-007
ermal	Vinyl Chloride	0.004	mg/l	0 004	rhg/t	M	1.4E-009	mg/kg-day	1.9E+000	mg/kg-day	2.6E-009
	Antimony	0.01	mg/f	0 01	rhg/l	M	4 7E-010	mg/kg-day		mg/kg-day	
	Arsenic	0.0896	mg//	0 896	rhg/l	M	4.2E-009	mg/kg-daly	1.5E+000	mg/kg-day	6 3E-009
	Cadmium	0.0085	mg/I	0.0085	mg/l	M	4 0E-010	mg/kg-day	_	mg/kg-day	
	Copper	1 23	mg/I	1.23	rhg/1	M	5 8E-008	mg/kg-dsty	· -	mg/kg-day	-
	Manganese	1 03	mg/1	1 03	rhg/l	M	4 8E-008	mg/kg-day	_	mg/kg-day	
	Nickel	0.144	mg/I	0 144	mg/l	M	6 8E-009	mg/kg-daly		mg/kg-day	-
	(Total)	1						1		8 9E-009

⁽¹⁾ Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

-- - Cancer Slope Factor not available, therefore Cancer Risk not calculated N/A - Not Applicable.

Scenario Timeframe: Current and Future

Medium: Surface Water

Exposure Medium: Sufface Water

Exposure Point: AOC 2 - ADC

Receptor Population: Area Residents (Trespassers)

Receptor Age: Youth (12-17 years)

Exposure	Chemical	Medium	Medium	Route	Route	EPC	Intak e	Intake	Cancer Slope	Cancer Slope	Cancer
Route	of Potential	EPC	EPC	EPC	EPC	Selected	(Cancer)	(Cancer)	Factor	Dose Units	Risk
	Concern	Value	Units	Value	Units	for Hazard		Units	i .		
						Calculation (1)					
gestion	Vinyl Chloride	0.0096	mg/l	0.0098	mg/1		2.5E-008	mg/kg-day	1 9E+000	mg/kg-day	4 8E-008
	Antimony	0.0098	mg/l	0.0098	mg/l	M	2.5E-006	mg/kg-day	-	mg/kg-day	-
	Arsenic	0.467	mg/l	0.487	mg/1	M [1.2E-006	mg/kg-day	1.5E+000	mg/kg-day	1.8E-008
	Manganese	0.673	mg/1	0.673	mg/l	M	1.7E-008	mg/kg-day	-	mg/kg-day	~
	Thellium	0.0023	mg/l	0 0023	mg/l	M	6.0E-009	mg/kg-day	-	mg/kg-day	-
	(Total)				1	1		}			1 9E-008
ermati	Vinyl Chloride	0 0098	mg/f	0.0098	mg/l	M	3 4E-009	mg/kg-day	1.9E+000	mg/kg-day	8 4E-009
	Antimony	0.0098	mg/l	0.0096	mg/l	M	4.5E-010	mg/kg-day	-	mg/kg-day	_
	Arsenic	0.467	mg/l	0.467	mg/1	M	2.2E-008	mg/kg-day	1.5E+000	mg/kg-day	3.3E-008
	Manganese	0 673	mg/l	0 873	mg/l	M	3.2E-008	mg/kg-day	-	mg/kg-day	-
	Thaillum	0.0023	mg/1	0.0023	mg/l	M	1.1E-010	mg/kg-day	-	mg/kg-day	
	(Total)		\		Į.	(1	1	į į	3 9E-008

⁽¹⁾ Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

⁻⁻⁻ Cancer Slope Factor not available, therefore Cancer Risk not calculated N/A - Not Applicable.

Scenario Timeframe Current and Future

Medium: Surface Water

Exposure Medium: Surface Water

Exposure Point ADC 3 - SPD

Receptor Population Area Residents (Trespassers)

Receptor Age: Youth (12-17 years)

Exposure	Chemical	Medium	Medium	Route	Route	EPC	Intake	intake	Cancer Slope	Cancer Slope	Cancer
Route	of Potential	EPC	EPC	EPC	EPC	Selected	(Cancer)	(Cancer)	Factor	Dote Units	Risk
	Concèrn	Value	Units	Value	Units	for Hazard		Units	}	[}
						Calculation (1)					
gestion	Methoxychlor	0.00091	mg/l	0 00091	mg/l	Market 1	2 4E-009	mg/kg-day	<u> </u>	mg/kg-day	
	Aluminum	2.61	mg/l	2 81	mg/l	M	6 8E-006	mg/kg-day	_	mg/kg-day	-
	Arsenic	0.0009	mg/l	0.0099	mg/l	M	2.8E-008	mg/kg-day	1 5E+000	mg/kg-day	3.9E-008
	Copper	0.247	mg/1	0.247	mg/l	M	6.4E-007	mg/kg-day		mg/kg-day	
	Manganese	0.919	mg//	0 919	mg/l	M	2.4E-008	mg/kg-day	_	mg/kg-day	
	Vanedium	0.0074	mg/l	0 0074	mg/l	M	1.9E-008	mg/kg-day	-	mg/kg-day	
	(Total)						1				3.9E-008
ermai	Methoxychlor	0.00091	mg/l	0.00091	mg/l	M	7.3E-010	mg/kg-day		mg/kg-day	-
	Aluminum	2.61	mg/1	2.01	mg/l	M	1.2E-007	mg/kg-day		mg/kg-day	
	Arsenic	0.0099	mg/l	0 0099	mg/l	M	4.7E-010	mg/kg-day	1.5E+000	mg/kg-day	7.0E-010
	Copper	0.247	mg/1	0.247	mg/t	M	1.2E-008	mg/kg-day	-	mg/kg-day	
	Manganese	0.919	mg/f	0.919	mg/l	M	4.3E-008	mg/kg-day	_	mg/kg-day	
	Venedium	0.0074	mg/I	0 0074	mg/l	M	3 5E-010	mg/kg-day	_	mg/kg-day]
	(Total)		1								7 0E-010

(1) Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

- - Cancer Slope Factor not available, therefore Cancer Riek not calculated $\mbox{N/A}$ - Not Applicable

Scenario Timeframe: Current and Future

Medium: Surface Water

Exposure Medium: Sufface Water Exposure Point: AOC 4 - ARC

Receptor Population: Area Residents (Trespassers)

Receptor Age: Youth (12-17 years)

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Dose Units	Cancer Risk
ngestion	Antimony	0.002	mg/l	0 092	mg/l		2 4E-007	mg/kg-day		mg/kg-day	- -
	Arsenic	0.013	rhg/l	0.013	mg/l	M	3 4E-008	mg/kg-day	1 5E+000	mg/kg-day	5 1E-008
	Cadmium	0.0065	mg/l	0.0085	mg/l	M	2.2E-008	mg/kg-day	_	mg/kg-day	_
	Copper	1.23	mg/l	1.23	mg/l	M	3.2E-008	mg/kg-day	-	mg/kg-day	-
	Manganese	0.73	rhg/f	0.73	mg/l	M	1 9E-008	mg/kg-day	_	mg/kg-day	_
	Nickel	0.128	mg/l	0.128	mg/l	M i	3.3E-007	mg/kg-day	-	mg/kg-day	
	Silver (Total)	0.038	rhg/l	0 038	mg/l	M	9.9E-008	mg/kg-day		mg/kg-day	5 1E-008
ermél	Antimony	0.092	rhg/l	0.092	mg/l	M	4 3E-009	mg/kg-day		mg/kg-day	
	Arsenic	0.013	rhg/l	0.013	mg/f	M	8.1E-010	mg/kg-day	1 5E+000	mg/kg-day	9 2E-010
	Cadmium	0.0065	rhg/l	0.0085	mg/i	M	4 DE-010	mg/kg-day	_	mg/kg-day	
	Copper	1.23	mg/l	1.23	mg/l	M	5.8E-008	mg/kg-day	_	mg/kg-day	-
	Manganese	0.73	rhg/l	0.73	mg/l	M	3 4E-008	mg/kg-day		mg/kg-day	
	Nickel	0.128	rhg/l	0 128	mg/l	M	8 0E-009	mg/kg-day	_	rhg/kg-day	_
	Silver	0.038	rhg/l	0 038	mg/l	M	1.1E-009	mg/kg-day	-	rhg/kg-day	_
	(Total)				_	1)		9 2E-010

(1) Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

-- - Cancer Slope Factor not available, therefore Cancer Risk not calculated.

N/A - Not Applicable.

Scenario Timeframe: Current and Future

Medium Surface Water

Exposure Medium: Surface Water

Exposure Point. AOC 5 - DSM

Receptor Population: Area Residents (Trespassers)

contract and an experience of the contract of

Receptor Age Youth (12-17 years)

l	The state of the s	1	j - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 -	i	[1 **	ra vi	i and i	,
Exposure	Chemical	Medium	Medium	Route	Route	EPC	Intake	Intake	Cancer Slope	Cancer Slope	Cancer
Route	of Potential	EPC	EPC	EPC	EPC	Selected	(Cahcer)	(Cancer)	Factor	Dose Units	Risk
	Concern	Value	Units	Value	Units	for Hazard		Units			I
		İ				Calculation (1)	ļ				
ingestion	Arsenic	0 569	mg/l	0 589	mg/l	W	1 5E-006	ng/kg-day	1.5E+000	mg/kg-day	2 2E-006
	Manganese	1.19	mg/l	1.19	mg/f	M	3.1E-006	mg/kg-day	-	mg/kg-day	- -
1	(Total)				į į				į		2 26 006
Dermal	Arsenic	0 569	mg/l	0.589	mg/l	M	2 7E-008	mg/kg-day	1 5E+000	mg/kg-day	4 0E-008
]	Manganese	1 19	mg/l	1 19	mg/l	M	5 6E-008	mg/kg-day	-	mg/kg-day	
	(Total)				{		 				4 0E-008
	The second state of the second	* 1. 202 - 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1.	• = • , •=+:=+:=+:=,:		• ====================================	' transcrater and '		TOTA	L RISK ACROSS	ALL PATHWAYS	2.3E-006

(1) Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation

--- Cancer Slope Factor not available, therefore Cancer Risk not calculated. N/A - Not Applicable

Scenario Timeframe. Current and Future

Medium: Surface Water

Exposure Medium: Surface Water Exposure Point: AOC 6 - RR

Receptor Population: Area Residents (Trespassers)

Receptor Age: Youth (12-17 years)

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Dose Units	Cancer Risk
gestion	Aluminum	2 31	mg/f	231	mg/t	- u	0 DE-008	mg/kg-day	ļ	mg/kg-day	=======================================
	Antimony	0.0057	rhg/l	0.0057	mg/l	M	1.5E-008	mg/kg-day	-	mg/kg-day	-
	Arsenic	0.02	mg/l	0.02	mg/l	M]	5.2E-008	mg/kg-day	1.5E+000	mg/kg-day	7 8E-008
	Copper	0 249	rhg/l	0 249	mg/l	M	6 BE-007	mg/kg-day	-	mg/kg-day	
	Manganese	0.101	mg/t	0.101	mg/l	M	2.6E-007	mg/kg-day	-	mg/kg-day	
	Thailium	0 005	mg/l	0.005	mg/l	M	1 3E-008	mg/kg-day	-	mg/kg-day	-
	Vanadium	0.0186	mg/l	0.0188	mg/l	M	4 8E-008	mg/kg-day	-	mg/kg-day mg/kg-day mg/kg-day mg/kg-day mg/kg-day	
	(Total)							1			7 8E-008
rmal	Aluminum	2.31	mg/t	2.31	mg/t	M	1.1E-007	mg/kg-day	_	mg/kg-day	
	Antimony	0.0057	mg/l	0 0057	mg/t	M	2 7E-010	mg/kg-day	-	mg/kg-day	-
	Arsenic	0.02	rng/I	0 02	mg/l	M	9.4E-010	mg/kg-day	1.5E+000	mg/kg-day	1 4E-009
	Copper	0.249	rhg/l	0 249	mg/l	M	1.2E-008	mg/kg-day	_	mg/kg-day	
	Manganese	0.101	mg/l	0.101	mg/l	м	4 7E-009	mg/kg-day	_	mg/kg-day	
	Thallium	0.005	mg/t	0 005	mg/l	M	2 4E-010	mg/kg-day		mg/kg-day	_
	Vanadium	0 0186	mg/l	0.0186	mg/l	M	8 7E-010	mg/kg-day	_	mg/kg-day	-
	(Total)								1		1 4E-009

(1) Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

--- Cancer Slope Factor not available, therefore Cancer Risk not calculated N/A - Not Applicable

Scenario Timeframe: Current and Future
Medium Surface Water
Exposure Medium: Sheffish
Exposure Point: AOC 5 - DSM
Receptor Population: Residents
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Cancer)	Intake (Cahcer) Units	Canser Slope Factor	Cancer Stope Factor Units	Cancer Risk
ingestion	Arsenic Manganese	0.569 1.19	mg/l mg/l	25 714	mg/kg mg/kg	R	7 8E-009 2.2E-007	mg/kg-day mg/kg-day	1.5E+000	mg/kg-day	1 2E-008
	(Total)				mg/rg				-	mg/kg-day S ALL PATHWAYS	1 2E-008

(1) Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation

- - Cancer Slope Factor not available, therefore Cancer Risk not calculated.
 N/A - Not Applicable.

Scenario Timeframe: Current and Future

Medium: Surface Water
Exposure Medium: Shefffish
Exposure Point: AOC 6 - RR
Receptor Population: Residents

Receptor Age: Adult

Exposure	Chemical	Me dłum	Medium	Route	Route	EPC	Intake	Intake	Cancer Slope	Cancer Slope	Cancer
Route	of Potential	EPC	EPC	EPC	EPC	Selected	(Cancer)	(Cancer)	Factor	Factor Units	Risk
	Concern	Value	Units	Value	Units	for Hazard		Units			
						Calculation (1)		<u> </u>			
gestion	Aluminum	2.31	mg/f	· · · · · · · · · · · · · · · · · · ·	mg/kg	P P		mg/kg-day	n si n <u>e</u> moresasi	mg/kg-day	····································
	Antimony	0.0057	mg/l	0 0057	mg/kg	R	1 BE-012	mg/kg-day	-	mg/kg-day	
	Arsenic	0.02	rhg/l	0.88	mg/kg	R	2 7E-010	mg/kg-day	1.5E+000	mg/kg-day	4.1E-010
	Copper	0.249	mg/l	49.8	mg/kg	R	1 5E-008	mg/kg-day	-	mg/kg-day	
	Manganese	0.101	mg/l	60.6	mg/kg	R	1 9E-008	mg/kg-day		mg/kg-day	_
	Thallium	0.005	mg/l	b .17	mg/kg	R	5 3E-011	mg/kg-day	~	mg/kg-day	-
	Vanadium	0.0186	mg/I		mg/kg	R		mg/kg-day	-	mg/kg-day]
	(Total)								,	1	4 1E-010

(1) Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

- - Cancer Stope Factor not available, therefore Cancer Risk not calculated.
 N/A - Not Applicable.

Scenario Timetrame. Current and Future

Medium: Sediment

Exposure Medium: Sediment Exposure Point: AOC 1 - HRDD

Rèceptor Population. Area Résidents (Trespassers)

Receptor Age: Youth (12-17 years)

Exposuré	Chemical	Medium	Medium	Route	Route	EPC	Intake	Intake	Cancer Slope	Cancer Slope	Cancer
Route	of Potential	EPC	EPC]	БРС	EPC	Selected	(Cancer)	(Cancer)	Factor	Dose Units	Risk
	Concern	Value	Units	Value	Units	for Hazard		Units			
			1			Calculation (1)					
géstion	Antimony	21.4	mg/kg	21.4	mg/kg		2 1E-007	mg/kg-day		mg/kg-day	
	Arsenic	1110	mg/kg	1110	mg/kg	[M ∥	1 1E-005	mg/kg-day	1.5E+000	mg/kg-day	1.7E-005
	Copper	5300	mg/kg	5300	mg/kg	M	5 3E-005	mg/kg-day	-	mg/kg-day	_
	Minganese	2080	mg/kg	2080	mg/kg	M	2 1E-005	mg/kg-day	_	mg/kg-day	_
	THallium	33	mg/kg	33	mg/kg	M	3 3E-008	mg/kg-day	_	mg/kg-day	_
	(Total)		1	!	1	1			\		1 7E-005
rmal	Ahtimony	21.4	mg/kg	21.4	mg/kg	M	2.0E-008	mg/kg-day		mg/kg-day	-
	Arsenic	1110	mg/kg	1110	mg/kg	M	3 1E-006	mg/kg-day	1 5E+000	mg/kg-day	4.7E-006
	Copper	5300	mg/kg	5300	mg/kg	M	5.0E-008	mg/kg-day	_	mg/kg-day	-
	Manganese	2080	mg/kg	2080	mg/kg	M	2.0E-008	mg/kg-day	-	mg/kg-day	-
	Thallium	33	mg/kg	33	mg/kg	M	3 1E-009	mg/kg-day	_	mg/kg-day	_
	(Total)				L						4 7E-006

(1) Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

-- Cancer Slope Factor not available, therefore Cancer Risk not calculated N/A - Not Applicable

Scenario Timeframe: Current and Future

Medium: Sediment

Exposure Medium: Sediment

Exposure Point. AOC 2 - ADC

Receptor Population: Area Residents (Trespassers)

Receptor Age: Youth (12-17 years)

Exposure	Chemical	Medium	Medium	Route	Route	EPC	Intake	Intake	Cancer Slope	Cancer Slepe	Cancer
Route	of Potential	EPC	EPC	EPC	EPC	Selected	(Cancer)	(Cancer)	Factor	Dose Uhits	Risk
	Concern	Value	Units	Value	Units	for Hazard		Units			
			· I			Calculation (1)					
gestion	Benzo(a)pyrene	6002	ug/kg	6002	ug/kg		6 0E-008	mg/kg-day	7.3E+000	mg/kg-day	4 4E-007
	Methoxychior	640000	ug/kg	640000	ug/kg	, M	6 4E-006	mg/kg-day	-	mg/kg-day	-
	Arsenic	3480	mg/kg	3480	mg/kg	M	3.5E-005	mg/kg-day	1.5E+000	mg/kg-day	5.2E-005
	(Total)				İ]			1	Dose Uhits mg/kg-day mg/kg-day	5 3E-005
ermal	Benzo(a)pyrene	8002	υg/kg	6002	ug/kg	M	7.3E-008	mg/kg-day	7.3E+000		5 4E-007
	Methoxychlor	840000	ug/kg	640000	ug/kg	M	6 0E-006	mg/kg-day	-	mg/kg-day	
	Arsenic	3480	mg/kg	3480	mg/kg	M	9 8E-006	mg/kg-day	1.5E+000	mg/kg-day	1.5E-005
	(Total)	1	1	l		1			1		1 5E-005

(1) Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation

- - Cancer Slope Factor not available, therefore Cancer Risk not calculated. N/A - Not Applicable.

Scenario Timeframe: Current and Rulure
Medum: Sediment
Exposure Medium: Sediment
Exposure Point: ACC 3 - SPD
Receptor Population: Area Residents (Trespessors)
Receptor Age: Youth (12-17 years)

Exposure	Charrical	Medium	Medium	Roule	Raute	EPC	irtako	Intake	Carper Slope	Cancer Slope	Cancer
Roule	of Potersal	EPC	EPC	EPC	EPC	Selected	(Cancer)	(Cencer)	Factor	Dose Urits	Risk
1	Concern	Value .	Urits	Velue	Units	for Hezerd		Urits	i		
			1			Calculation (1)					
eston :	a		· • · · · · · · · · · · · · · · · · · ·	**** . ···· . ·				·			
B	rezo(b)iluorenihene	910	Leg/leg	910	up/kg	M	9.1E-009	mg/kg-day	7.3E-001	mg/kg-day	6.6E-000
B	rec(e)pyrane	630	ug/kg	630	upka	M	6.3E-009	mg/kg-day	7.3E+000	mg/kg-day	4.6E-006
a	benec(a,h)arifracene	130	ug/kg	130	upAp	M 1	1.3E-009	mg/kg-day	7.3E+000	mg/kg-day	9.5E-006
	odor 1254	66	Lug/kg	68	ug/kg	M	6.8E-010	mg/kg-day	2.0E+000	mg/kg-day	1.4E-009
H	ptachicr	220	ugAg	220	ug/kg	M	2.2E-009	mg/kg-day	4.5E+000	mg/kg-dey	9.9E-006
, u	ethoxychlor	130000	ugAcg	130000	ug/kg	M	1.3E-006	mg/kg-day	-	mg/kg-day	-
i A	antrum .	13800	mg/kg	13600	mg/kg	M	1.4E-007	mg/kg-day	-	mg/kg-day	-
	Smorty	2.3	mg/kg	2.3	mg/kg	M	2.3E-008	mg/kg-day	-	mg/kg-day	-
~	earlc .	21.8	mg/kg	21.8	mg/kg	M	2.2E-007	mg/kg-day	1.5E+000	mg/kg-day	1.5E-007
C	photo.	816	mg/kg	816	mg/kg	M	8.2E-006	mg/kg-day	-	mg/kg-day	_
M	IL/DILLIONO	282	mg/kg	282	mg/kg	M	2.8E-008	mg/kg-day	-	mg/kg-day	-
V	nedun	47.9	mg/kg	47.9	mg/kg	M	4.8E-007	mg/kg-day	-	mg/kg-day	
	(Tol	(a)	1 .		}						2.2E-00
mel						1			1		1.11 7 7
B	reo(b)Au prerthone	910	ug/kg	910	ug/kg	M	1.1E-008	mg/kg-day	7.3E-001	mg/kg-day	8.1E-000
B	rzo(e)pyrene	630	rig/kg	630	ug/kg	M	7.7E-009	mg/kg-day	7.3E+000	mg/kg-day	5.6E-000
_	benzo(a,h)erifracene	130	ug/kg	130	Lighto	M	1.6E-009	mg/kg-day	7.3E+000	mg/kg-day	1.2E-000
	odor 1254	68	ug/kg	68	up/kg	M	8.9E-010	mg/kg-day	2.0E+000	mg/kg-day	1.8E-00
1 .	ptechlor	220	ug/kg	220	upleg	M	2.1E-009	mg/kg-day	4.5E+000	mg/kg-day	9.3E-009
1	sthoxydda r	130000	ugAq	130000	nD(c)	M	1.2E-008	mg/kg-day	-	mg/kg-day	-
	aminum	13800	mg/kg	13600	mg/kg	M	1.3E-005	mg/kg-day	-	mg/kg-day	-
, ,	é mony	2.3	mg/kg	2.3	mg/kg	M	2.2E-009	mg/kg-day	-	mg/kg-day	-
11	earic .	21.8	mg/kg	21.8	mg/kg	M	6.1E-006	mg/kg-day	1.5E+000	mg/kg-day	4.1E-00
l l	pper) 816	mg/kg	816	mg/kg) M	7.7E-007	mg/kg-day	-	mg/kg-day	_
M	angariase	262	mgArg	262	mg/kg	M	2.7E-007	mg/kg-day	-	mg/kg-day	-
V	redum	47.9	mg/kg	47.9	mg/kg	M	4.5E-008	mg/kg-day	-	mg/kg-day	- .
L.	(Tot	ani	l	Į	t	1		l	l	l i	1.3E-60

⁽¹⁾ Medium-Specific (M) or Route-Specific (R) EPC selected for hezard calculation.

⁻⁻⁻ Carnor Slope Factor not evalishte, therefore Carnor Risk not calculated. N/A - Not Applicable.

Scenario Timeframe. Current and Future

Medium: Sediment

Exposure Medium: Sediment Exposure Point: AOC 4 - ARC

Receptor Population: Area Residents (Trespassers)

Receptor Age: Youth (12-17 years)

Exposure	Chemical	Medium	Medium	Route	Route	EPC	intake	intake	Cancer Slope	Cancer Slope	Cancer
Route	of Potential	EPC	EPC	EPC	EPC	Selected	(Cancer)	(Cancer)	Factor	Dose Units	Risk
	Concern	Value	Units	Value	Units	for Hazard		Units			1
						Calculation (1)		Ì			
gestion	Benzo(a)pyrene	1000	ug/kg	1000	ug/kg	 	1 0E-008	mg/kg-day	7.3E+000	mg/kg-day	7 3E-008
	Dieldrin	41	ug/kg	41	ug/kg	M	4.1E-010	mg/kg-day	1 6E+001	mg/kg-day	8.6E-009
	Aroclor-1248	2100	ug/kg	2100	ug/kg	M	2.1E-008	mg/kg-day	2 0E+000	mg/kg-day	4.2E-008
	Aroclor-1254	57500	ug/kg	57500	ug/kg	M	5 8E-007	mg/kg-day	2 0E+000	rhg/kg-day	1.2E-008
	Aroclor-1260	2100	ug/kg	2100	ug/kg	M	2.1E-008	mg/kg-day	2 0E+000	mg/kg-day	4 2E-008
	2,3,7,8-TCDD equiv	0.08	ug/kg	0.08	ug/kg	M	8.0E-013	mg/kg-day	1.5E+005	mg/kg-day	1.2E-007
	Antimony	26	mg/kg	26	mg/kg	M	2 BE-007	mg/kg-day	-	rhg/kg-day	-
	Arsenic	49	mg/kg	49	mg/kg	M	4 9E-007	mg/kg-day	1.5E+000	mg/kg-day	7.4E-007
	Copper	1493	mg/kg	1493	mg/kg	M	1.5E-005	mg/kg-day		mg/kg-day	-
	Silver	321	mg/kg	321	mg/kg	M	3 2E-006	mg/kg-day	_	mg/kg-day	-
	m	otal)	Į l					į			2 2E-006
ermal	Benzo(a)pyrene	1000	ug/kg	1000	ug/kg	M	1 2E-008	mg/kg-day	7.3É+000	mg/kg-day	8 9E-008
	Dieldrin	41	ug/kg	41	ug/kg	M	3.9E-010	mg/kg-day	1.6E+001	mg/kg-day	8 2E-009
	Arocior-1248	2100	ug/kg	2100	ug/kg	M	2 BE-008	mg/kg-day	2.0E+000	mg/kg-day	5.5E-008
	Aroclor-1254	57500	ug/kg	57500	ug/kg) M	7 8E-007	mg/kg-day	2 0E+000	mg/kg-day	1 5E-006
	Aroclor-1280	2100	ug/kg	2100	ug/kg	M	2 8E-008	mg/kg-day	2.0E+000	mg/kg-day	5 5E-008
	2,3,7,8-TCDD equiv.	0.08	ug/kg	0.08	ug/kg	M	2 3E-013	mg/kg-day	1.5E+005	mg/kg-day	3 4E-008
	Antimony	26	mg/kg	26	mg/kg	M	2.4E-008	mg/kg-day	-	mg/kg-day	-
	Arsenic	49	mg/kg	49	mg/kg	M	1.4E-007	mg/kg-day	1 5E+000	mg/kg-day	2 1E-007
	Copper	1493	mg/kg	1493	mg/kg	M	1 4E-008	mg/kg-day	_	mg/kg-day	-
	Silver	321	mg/kg	321	mg/kg	M	3.0E-007	mg/kg-day	_	mg/kg-day	
	π	otal)	1			1		1	1		2 0E-006

⁽¹⁾ Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation

^{-- -} Cancer Slope Factor not available, therefore Cancer Risk not calculated N/A - Not Applicable.

Scenario Timeframe Current and Future

Medium Sediment

Exposure Medium Sedimeht

Exposure Point. ADC 5 - DSM

Receptor Population: Area Residents (Trespassers)

Receptor Age. Youth (12-17 years)

Exposure	Chemical	Medium	Medium	Route	Route	EPC	Intake	intake	Cancer Slope	Canter Slope	Cancer
Route	of Potential	EPC	EPC	EPC	EPC	Selected	(Cancer)	(Cancer)	Factor	Dobe Units	Risk
	Concern	Value	Units	Value	Units	for Hazard Calculation (1)		Units			
gestion	Benzo(s)enthracene	300	ug/kg	300	ug/kg	M =====	3 0E-009	mg/kg-day	7.3E-001	mg/kg-day	2 2E-009
	Benzo(b)fluoranthene	730	ug/kg	730	u g /kg	M	7.3E-009	mg/kg-day	7.3E-001	mg/kg-day	5 3E-009
	Benzo(a)pyrene	300	ug/kg	300	ug/kg	M	3 0E-009	mg/kg-day	7.3E+000	mg/kg-day	2.2E-008
	Indeno(1,2,3-cd)pyrene	220	ug/kg	220	ug/kg	M	2.2E-009	mg/kg-day	7.3E-001	mg/kg-day	1.6E-009
	Aroctor-1254	470	ug/kg	470	ug/kg	M	4.7E-009	ing/kg-day	2 0E+000	mg/kg-day	9 4E-009
	Arsenic	4030	mg/kg	4030	mg/kg	M	4 0E-005	mg/kg-day	1.5E+000	mg/kg-day	8.0E-005
	(То	otai)			1	1					6 0E-005
ermal	Benzo(a)anthracerie	300	ug/kg	300	uþ/kg	M	3.7E-009	ing/kg-day	7.3E-001	mg/kg-day	2 7E-009
	Benzo(b)fluoranthene	730	ug/kg	730	ug/kg	M	8.9E-009	mg/kg-day	7.3E-001	mg/kg-day	6 5E-009
	Benzo(a)pyrene	300	ug/kg	300	ug/kg	M	3 7E-009	mg/kg-day	7 3E+000	mg/kg-day	2 7E-008
	Indeno(1,2,3-cd)pyrene	220	ug/kg	220	u b /kg	M	2.7E-009	mg/kg-day	7.3E-001	mg/kg-day	2 0E-009
	Aroctor-1254	470	ug/kg	470	ub/kg	M	6.2E-009	mg/kg-day	2.0E+000	mg/kg-day	1 2E-008
	Arsenic	4030	mg/kg	4030	ug/kg	M	1 1E-005	mg/kg-day	1 5E+000	mg/kg-day	1.7E-005
	(To	tal)			1	1	l .	1	1		1.7E-005

(1) Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

 \sim - Cancer Slope Factor not available, therefore Cancer Risk not calculated N/A - Not Applicable.

Scenario Timeframe: Current and Future

Medium: Sediment

Exposure Medium: Sediment

Exposure Point: AOC 6 - RR

Receptor Population: Area Residents (Trespassers)

Receptor Age: Youth (12-17 years)

Exposure	Chemical	Medium	Medium	Route	Route	EPC	Intake	Intake	Cancer Slope	Cancer Slope	Cancer
Route	of Potential	EPC	EPC	EPC	EPC	Selected	(Cancer)	(Cancer)	Factor	Dose Units	Risk
	Concern	Value	Units	Value	Units	for Hazard		Units			
			(Calculation (1)		ļ			
estion					un en en en en en en en en en en en en en		alebrate in the co.	 		himan man n	ļ
	Arsenic	2200	mg/kg	2200	mg/kg	M	2 2E-005	mg/kg-day	1.5E+000	mg/kg-day	3.3E-0
	Copper	3560	mg/kg	3560	mg/kg	M	3 6E-005	mg/kg-day	-	rhg/kg-day	-
	(Total)					i i					3 3E-00
mal	Arsenic	2200	mg/kg	2200	mg/kg	M	6.2E-006	mg/kg-day	1 5E+000	mg/kg-day	9 3E-00
	Copper	3560	mg/kg	3580	mg/kg	M	3.3E-006	mg/kg-day		mg/kg-day	
	(Total)	Ĭ.	[•	!	Į.				9 3E-00

(1) Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation

--- Cancer Slope Factor not available, therefore Cancer Risk not calculated. N/A - Not Applicable.

TABLE 8.80 RME CALCULATION OF CANCER RISKS REASONABLE MAXIMUM EXPOSURE HORSESHOE ROAD COMPLEX SITE, SAYREVILLE, NEW JERSEY

Scerario Timehame: Future
Medium: Soll
Exposure Medium: Surface Soll
Exposure Point: AOC 1 - HRDD
Receptor Population: Site Workers
Receptor Age: Adult

Exposure	Chemical	Medium	Medium	Route	Route	EPC	Irtake	Inteke	Cancer Stope	Cancer Stope	Carroer
Roule	of Potertial	EPC	EPC	EPC	EPC	Selected	(Cancer)	(Cancer)	Factor	Dose Units	Risk
ļ	Concern	Value	Units	Value	Units	for Hazerd		Urils	į.	l .	
						Calculation (1)					
gestion .	Didden	126	ug/kg	126	ug/kg	·	2 2E-008	mg/kg-day	1 8E+001	mg/kg-day	3.5E-007
	Arodor-1248	9500	ugAkg	9500	ug/kg	M	1.7E-006	mg/kg-day	2 0E+000	mg/kg-day	3.4E-006
ļ	Arodor-1254	850	ug/kg	850	ug/kg	M	1.5E-007	mg/kg-day	2.0E+000	mg/kg-day	3.1E-00
	Arodor-1280	720	ugArg	720	ug/kg	M	1.3E-007	mg/kg-day	2.0E+000	mg/kg-day	2.6E-007
	Aluminum	14250	mg/kg	14250	mg/kg	M	2.6E-003	mg/kg-day	-	mg/kg-day	-
	Aritmony	3.4	mg/kg	3.4	mg/kg	М	6.1E-007	mg/kg-day	-	mg/kg-day	-
	Arseric	53	mg/kg	53	mg/kg	M	9.5E-008	mg/kg-day	1.5E+000	mg/kg-day	1.4E-00
	Cedmium	4.5	mg/kg	4.5	mg/kg	M	8 1E-007	mg/kg-day	-	mg/kg-dwy	-
	Copper	433	mg/kg	433	mg/kg	M	7.8E-005	mg/kg-day	-	mg/kg-day	-
	Manganese	420	mg/kg	420	mg/kg	M	7.6E-005	mg/kg-day) -	mg/kg-day	-
	Nickel	108	mg/kg	108	mg/kg	M I	1.96-005	mg/kg-day	-	mg/kg-day	-
	Silver	30	mg/kg	30	mg/kg	M	5.4E-006	mg/kg-day	-	mg/kg-day	-
1	Theffum	1	mg/kg	1	mg/kg	M	1.8E-007	mg/kg-day	-	mg/kg-day	-
	Veredum	64	mg/kg	64	mg/kg	M	1.2E-005	mg/kg-day	-	mg/kg-day	
	(Total			1		l			l		1 9E-00
rmel	Dielon	120	ug/kg	120	ug/kg	M	2.4E-007	mg/kg-day	1 8E+001	mg/kg-day	3.8E-00
	Arodor-1248	9500	ug/kg	9500	Ug/kg	M	2.7E-005	mg/kg-day	2.0E+000	mg/kg-day	5.3E-00
ļ	Arodor-1254	650	ug/kg	850	ug/kg	M	2.4E-008	mg/kg-day	2 0E+000	mg/kg-day	4 8E-00
	Arodor-1280	720	ug/kg	720	Lig/kg	M	2 0E-008	mg/kg-dey	2.0E+000	mg/kg-day	4.0E-00
1	Aluminum	14250	mg/kg	14250	mg/kg	M	2.9E-003	mg/kg-day	-	mg/kg-day	-
Į.	Artimony	34	mg/kg	34	mg/kg	M	6.8E-007	mg/kg-day	-	mg/kg-day	-
	Arseric	53	mg/kg	53	mgArg	M	3.2E-005	mg/kg-day	1.5E+000	mg/kg-dey	4.8E-00
	Cadmium	4.5	mg/kg	4.5	mg/kg	M	9.0E-008	mg/kg-day	-	mg/kg-dey	-
	Copper	433	mgArg	433	mgAkg	M	8.7E-005	mg/kg-day	-	mg/kg-day	-
	Manganese	420	mg/kg	420	mgArg	M	8 4E-005	mg/kg-day	-	mg/kg-dey	-
	Nickel	108	mg/kg	108	mgArg	M	2 2E-005	mg/kg-day	-	mg/kg-dey	-
	Silver	30	mg/kg	30	mg/kg	M	8.0E-008	mg/kg-day	-	mg/kg-day	-
	Theillum	1	mg/kg	1	mg/kg	M	2.0E-007	mg/kg-day	-	mg/kg-day	-
ļ	Variadium	64	mg/kg	64	mg/kg	M	1.3E-005	mg/kg-day	-	mg/kg-day	116-00

⁽¹⁾ Medium-Specific (M) or Route-Specific (R) EPC selected for hezerd calculation.

N/A - Not Applicable.

⁻⁻⁻ Cancer Slope Factor not available, therefore Cancer Risk not calculated.

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TABLE 8 8s.CT CALCULATION OF CANCER RISKS CENTRAL TENDENCY EXPOSURE HORSESHOE ROAD COMPLEX SITE, SAYREVILLE, NEW JERSEY

Scenario Timeframe: Future

Medium: Soil

Exposure Medium: Surface Soil
Exposure Point: AOC 1 - HRDD
Receptor Population: Site Workers

Cancer	Cancer Slope	Cancer Slope	Intake	Intake	EPC	Route	Route	Medium	Medium	Chemical	Exposure
Risk	Dose Units	Factor	(Cancer)	(Cancer)	Selected	EPC	EPC	EPC	EPC	of Potential	Route
	1		Units		for Hazard	Units	Value	Units	Value	Concern	
					Calculation (1)	1					
8.8E-000	mg/kg-day	1.6E+001	mg/kg-day	5.5E-010	M M	ug/kg	24	ug/kg	24	Dieldrin	pestion
7.7E-008	mg/kg-day	2.0E+000	mg/kg-day	3.9E-006	M	ug/kg	1678	ug/kg	1678	Aroclor-1248	
1.8E-000	mg/kg-day	2.0E+000	mg/kg-day	9.1E-009	м	ug/kg	396	ug/kg	398	Arocior-1254	
9.5E-006	mg/kg-day	2.0E+000	mg/kg-day	4.8E-009	M	ug/kg	207	ug/kg	207	Aroclor-1260	
-	mg/kg-day	- }	mg/kg-day	1.6E-004	M	mg/kg	6975	mg/kg	6975	Aluminum	
_	mg/kg-day	-	mg/kg-day	4.8E-008	M	mg/kg	2.1	mg/kg	2.1	Antimony	
1.0E-000	mg/kg-day	1.5E+000	mg/kg-day	6.9E-007	M	mg/kg	30	mg/kg	30	Arsenic	
-	mg/kg-day	-	mg/kg-day	5.3E-008	м	mg/kg	2.3	mg/kg	2.3	Cadmium	
~	mg/kg-day	-	mg/kg-day	4.3E-008	М	mg/kg	186	mg/kg	186	Copper	
-	mg/kg-day	- \	mg/kg-day	3.6E-006	M	mg/kg	155	mg/kg	155	Manganese	
-	mg/kg-day	-	mg/kg-day	1.0E-006	M	mg/kg	44	mg/kg	44	Nickel	
-	mg/kg-day	-	mg/kg-day	3.7E-007	M	mg/kg	16	mg/kg	16	Silver	
_	mg/kg-day	-	mg/kg-day	1.4E-008	м	mg/kg	0.63	mg/kg	0.63	Thellium	
_	mg/kg-day	l – i	mg/kg-day	8.5E-007	M	mg/kg	37	mg/kg	37	Vanadium	
1.1E-000	[{								(Total)	
1.8E-00	mg/kg-day	1.6E+001	mg/kg-day	1.1E-008	M	ug/kg	24	ug/kg	24	Dieldrin	rmal
2.2E-000	mg/kg-day	2.0E+000	mg/kg-day	1.1E-006	M	ug/kg	1678	ug/kg	1678	Aroctor-1248	
5.2E-00	mg/kg-day	2.0E+000	mg/kg-day	2.6E-007	M	ug/kg	396	ug/kg	396	Aroclor-1254	
2.7E-00	mg/kg-day	2.0E+000	mg/kg-day	1.4E-007	м	ug/kg	207	ug/kg	207	Aroclor-1260	
_	mg/kg-day	-	mg/kg-day	3.3E-004	М	mg/kg	6975	mg/kg	6975	Aluminum	
_	mg/kg-day	-	mg/kg-day	9.9E-006	M	mg/kg	2.1	mg/kg	2.1	Antimony	
8.3E-00	mg/kg-day	1.5E+000	mg/kg-day	4.2E-006	M	mg/kg	30	mg/kg	30	Arsenic	
-	mg/kg-day	- 1	mg/kg-dey	1.1E-008	M	mg/kg	2.3	mg/kg	2.3	Cadmium	
-	mg/kg-day	_	mg/kg-day	8.7E-006	м	mg/kg	186	mg/kg	186	Copper	
_	mg/kg-day	-	mg/kg-day	7.3E-006	м	mg/kg	155	mg/kg	155	Manganese	
_	mg/kg-day	-	mg/kg-day	2.1E-006	M	mg/kg	44	mg/kg	44	Nickel	
_	mg/kg-day	-	mg/kg-day	7.5E-007	M	mg/kg	16	mg/kg	16	Silver	
_	mg/kg-day	- !	mg/kg-day	3.0E-008	м	mg/kg	0.63	mg/kg	0.63	Thallium	
_	mg/kg-day] - 1	mg/kg-day	1.7E-006	м }	mg/kg	37	mg/kg	37	Vanadium	
9.5E-00								1	· -, -, -, -, -, -, -, -, -, -, -, -, -,	(Total)	

⁽¹⁾ Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

 $[\]sim$ - Cancer Slope Factor not available, therefore Cancer Risk not calculated. N/A - Not Applicable.

TABLE 8 66 RME CALCULATION OF CANCER RISKS REASONABLÉ MAXIMUM EXPOSURE HORSESHOE ROAD COMPLEX SITE. SAYREVILLE, NEW JERSEY

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Surface Soil
Exposure Point: AOC 2 - ADC
Receptor Population: Site Workers
Receptor Age: Adult

Exposure	Chemical	Medium	Medium	Roule	Route	EPC	Irtake	Intake	Cancer Slope	Cancer Slope	Cancer
Route	of Potential	EPC	EPC	EPC	€ PC	Selected	(Cancer)	(Cencer)	Factor	Dose Units	Fisk
	Concern	Value	Units	Value	Units	for Hazerd		Urits	\$	ì	
				1		Calculation (1)					
e st on	Benzo(a)er@vacene	21000	ug/kg	21000	ugkg	† · · · · · · · · · · · · · · · · · · ·	3.6E-007	mg/kg-dey	7 3E-001	mg/kg-day	2 SE-007
	Benzo(b)fluorenthene	30000	ug/kg	30000	ulg/kg	M	5.4E-008	mg/kg-day	7.3E-001	mg/kg-day	3.9E-006
	Benzo(a)pyrene	20000	up/kg	20000	ug/kg	M	3.6E-006	mg/kg-dey	7.3E+000	mg/kg-day	2.8E-005
	Indeno(1.2,3-cd)pyrene	12000	up/kg	12000	ug/kg	M	2.2E-008	mg/kg-dey	7 3E-001	mg/kg-day	1 6E-006
	Dibenzo(s.h)enthracene	2300	ug/kg	2300	ug/kg	M	4.1E-007	mg/kg-dey	7.3E+000	mg/kg-day	3 0E-006
	Adın	400	ug/kg	400	ug/kg	M	7.2E-006	mg/kg-dey	1.7E+001	mg/kg-day	1.2E-000
	Diekhin	740	ug/kg	740	ub/kg	M	1 3E-007	mg/kg-day	1.6E+001	mg/kg-day	2.1E-006
	Methoxychior	980000	LigAtg	960000	ubykg	M	1 8E-004	mg/kg-day	-	mg/kg-day	-
	Arodor-1248	34000	ugArg	34000	ub/kg	M	6 1E-008	mg/kg-dey	2.0€+000	mg/kg-day	1.2E-00
	Aroder-1260	2500	⊔ p /kg	2500	ubykg	M 4 5E-007 mg/kg-dey 2.0E+000	mg/kg-day	9.0E-00			
	2,3,7,8-TCDD equiv.	0 308	ug/kg	0.308	ugAng	M	5 5E-011	mg/kg-dey	1.5E+005	mg/kg-day	8.3E-00
	Antimorty	32	mgAtg	32	mg/kg	M	5.8E-006	mg/kg-day	-	mg/kg-day	-
	Arseric	3640	mg/kg	3640	mg/kg	M	6.6E-004	mg/kg-dey	1.5E+000	mg/kg-day	4.4E-00
	(Tal		1]	ł	i		1			5.0E-00
mai	Benzo(s)er@vecene	21000	ug/kg	21000	upkg	M	5 5E-005	mg/kg-dey	7.3E-001	mg/kg-day	4.0E-005
	Benzo(b)#uorar#hene	30000	up/kg	30000	ug/kg	M	7 8E-005	mg/kg-day	7 3E-001	mg/kg-day	5.7E-00
	Benzo(e)pyrene	20000	ug/kg	20000	ug/kg	M	5 2E-005	mg/kg-day	7 3E+000	mg/kg-dey	3.8E-004
	Indeno(1,2,3-cd)pyrene	12000	Lig/kg	12000	ug/kg	M	3.1E-005	mg/kg-dey	7.3E-001	mg/kg-day	2.3E-00
	Dibenzo(a h)erthracene	2300	ug/kg	2300	ug/kg	M	6 0E-006	mg/kg-day	7.3E+000	mgArg-day	4.4E-00
	Aldrin	400	LID/RD	400	ug/kg	M	8 0E-007	mg/kg-dey	1.7E+001	mg/kg-day	1.4E-00
	Dieldfin	740	ug/kg	740	ug/kg	M	1 5E-006	mg/kg-dey	1.6E+001	mg/kg-day	2.4E-005
	Methoxychior	980000	ug/kg	960000	ug/kg	M	2.0E-003	mg/kg-dey	-	mg/kg-day	-
	Arodar-1248	34000	ug/kg	34000	ug/kg	M	9 5E-005	mg/kg-dey	2.0E+000	mg/kg-day	1.9E-00-
	Arodor-1260	2500	ug/kg	2500	ugAtg	M	7.0E-006	mg/kg-day	2 0E+000	mg/kg-day	1 4E-009
	2,3,7,8-TCDD equiv.	0:306	ug/kg	0 308	ugArg	M	1 8E-010	mg/kg-day	1.5E+005	mg/kg-day	2.8E-00
	Artimony	32	mg/kg	32	mg/kg	M	6 4E-006	mg/kg-day	-	mg/kg-day	_
	Arseric	3840	mg/kg	3640	mg/kg	M	2.2E-006	mg/kg-day	1.5E+000	mg/kg-day	1 5E-00
	(Tot			1		1 [8.1E-00-

⁽¹⁾ Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

 $[\]sim$ - Cancer Slope Factor not available, therefore Cancer Risk not calculated N/A - Not Applicable.

TABLE 8 6e.CT CALCULATION OF CANCER RISKS CENTRAL TENDENCY EXPOSURE HORSESHOE ROAD COMPLEX SITE, SAYREVILLE, NEW JERSEY

Scenario Timelhame: Future Medium: Soll Exposure Medium: Surface Soil

Exposure Point: AOC 2 - ADC Receptor Population: Site Workers Receptor Age: Adill

Exposure	Cherrical	Medium	Medium	Roule	Route	EPC]	irteice	irtaka	Cencer Slope	Cancer Slope	Cancer
Roule	of Poterdial	EPC	EPC	EPC	EPC	Selected	(Cancer)	(Cencer)	Fector		Risk
	Concern	Value	Unite	Velue	Urite	for Hazard	,,	Units		DOSE CHIS	PO SEC
					<u> </u>	Calculation (1)					
edon	Велио(в)влёттвоете	4554	ugika	4534	ug/kg	1	1.0E-008	mg/kg-dev	7.3E-001	Laurus	7.6E-60
	Berzo(b)fluorenthem	7841	ug/kg	7841	ug/kg	M	1.8E-006	mg/kg-day	7.3E-001		1.3E-00
	Berzo(a)pyrane	5343	ug/kg	5343	ug/kg	M	1.2E-008	mg/kg-day	7.3E+000		9.0E-00
	Indeno(1,2,3-cd)pyrene	3251	ug/kg	3251	ug/kg	w	7.5E-009	mg/kg-day	7.3E-001		5.5E-00
	Diberwo(s,h)er#vscene	2532	upleg	2532	upka		5.8E-009	mg/kg-day	7.3E+000		5.3E-00 4.3E-00
	Adin	114	ugikg	114	upAq	M	2.6E-010	mg/kg-day	1.7E+001		
	Dieldrin	200	ugAg	200	upha	M	4.6E-010	make-day	1.6E+001		4.5E-00
	Methoxychiar	72823	upAg	72623	upto	M .	1.7E-007	moles-day	1.02.001	1	7.4E-00
	Arodor-1248	7359	ugAg	7350	ug/kg	M 1	1.7E-006	maka-day	2.0€+000		
	Arodor-1280	1500	upleg	1500	upto	M	3.5E-009	marka-day	2.0E+000	,	3.4E-00
	2,3,7,8-TCDD equiv.	0.15	uptop	0.15	ug/kg	M	3.5E-013	mg/kg-day	1.5E+005		6.9E-00
	Aritmony	2.7	mg/kg	2.7	mg/kg	M	6.2E-008	maka-dev	1.52.003		5.2E-00
	Arseric	46	mg/kg	46	maka	_ m	1.1E-006	mg/kg-day	1.5E+000		745.44
	(To							"Gray cay	1.52*000	прира	7.1E-00 9.7E-00
mel	Beneo(a)erévacene	4534	ugAg	4534	up/ip		2.8E-006	mg/kg-day	7.3E-001		2.0E-00
	Berzo(b)Ausrarähene	7841	upAg	7841	uples	l w fi	4.8E-008	mg/kg-day	7.3E-001	make-day make-day	
	Benzo(a)pyrene	5343	Lighte	5343	upAg	M	3.3E-006	mg/kg-day	7.3E+000		3.5E-00 2.4E-00
	Indeno(1,2,3-rd)pyrene	3251	ugAng	3251	upleg	1 M	2.0E-008	mg/kg-day	7.3E-001	1	1.5E-00
	Ciberzo(e,t-)er#recene	2532	upto	2532	Up/kg	M 1	1.5E-008	mg/kg-day	7.3E+000	1	1.1E-00
	Aldrin	114	ug/kg	114	upAq	M	5.4E-008	mg/kg-day	1.7E+001	1	9.1E-00
	Cleidin	200	ug/kg	200	ug/kg	M	9.4E-006	mg/kg-day	1.6E+001		1.5E-00
	Methoxychior	72823	ug/kg	72823	up/ep	M	3.4E-005	mg/kg-day	1.02.7001	1	
	Arodor-1248	7359	upto	7359	upAq	M	4.8E-006	mg/kg-day	2.0E+000		9.7E-00
	Arodor-1280	1500	upleg	1500	upleg	M	9.9E-007	mg/kg-day	2.0E+000	1	2.0E-00
	2,3,7,8-TCDD equiv.	0.15	upAq	0.15	ug/kg	M	2.1E-011	mg/kg-day	1.5E+005		3.2E-00
	Artimony	2.7	mg/kg	2.7	mg/kg	M	1.3E-007	mg/kg-day			3.22-00
	Arseric	46	mg/kg	46	maka	M H	6.5E-006	mg/kg-day	1.5E+000		
	(Tol	al)	[* *	•			7.52 900		1.JE7000	mg/ng-only	4.3E-00

⁽¹⁾ Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

⁻⁻ Cancer Slope Factor not evallable, therefore Cancer Risk not calculated. N/A - Not Applicable.

TABLE 8 66 RME CALCULATION OF CANCER RISKS REASONABLE MAXIMUM EXPOSURE HORSESHOE ROAD COMPLEX SITE, SAYREVILLE, NEW JERSEY

Scenario Timeframe: Future
Medium: Sul
Exposure Medium: Surface Soll
Exposure Point: AOC 3 - SPD
Receptor Population: Site Workers
Receptor Age: Adult

Exposure	Chemical	Medium	Medium	Route	Route	EPC	Irritaice	irtake	Cancer Slope	Carroer Slope	Cancer
Roule	of Potential	EPC	EPC	EPC	EPC	Selected	(Cancer)	(Cencer)	Factor	Dose Urils	Risk
ľ	Concern	Value	Units	Value	Urits	for Hazerd		Urits			
-						Calculation (1)		1]	ļ	
pession	Beneo(a)arthracene	1761	∟ig/kg	1701	ugAkg	7	3.1E-007	mg/kg-dey	7 3E-001	ing/kg-day	2 2E-007
- 10	Benzo(b)Auorarahene	2883	ug/kg	2883	ug/kg	M	5.2E-007	mg/kg-day	7.3E-001	Ing/kg-day	3 8E-007
- 10	Beneo(a)pyrene	1468	ug/kg	1468	ug/kg	M	2.6E-007	mg/kg-day	7.3E+000	mg/kg-day	1 9E-006
- -	indeno(1,2,3-cd)pyrene	1302	ugArg	1302	ug/kg	M	2.3E-007	mg/kg-day	7.3E-001	mg/kg-day	1.7E-007
- 10	Methoxychlor	650000	ug/kg	650000	ug/kg	M	1.2E-004	mg/kg-day	-	mg/kg-day	~
	Akamiraan	8432	rng/kg	8432	mg/kg	M	1.5E-003	mg/kg-dey	-	mg/kg-day	-
]4	Antimony	17	rng/kg	17	mg/kg	M	3.1E-006	mg/kg-day		mg/kg-day	-
4	Arsenic	24	mg/kg	24	mg/kg	M	4.3E-006	mg/kg-day	1 5E+000	mg/kg-day	6.5E-006
•	Copper	1519	mg/kg	1519	mg/kg	M	2.7E-004	mg/kg-day	} -	mg/kg-day	-
ļī	Manganese	215	mg/kg	215	mgArg	M	3.9€-005	m@/kg-day	-	mg/kg-day	-
	?hellum	0.92	mgArg	0.92	mg/kg	M	1.7E-007	mg/kg-day	-	mg/kg-day	-
, I	Vanedium	37	mgArg	37	mg/kg	M	6.7E-006	mg/kg-dey	-	mg/kg-day	
	(T								1		9.2E-008
	Benzo(a)er@vacene	1701	ug/kg	1701	ug/kg	M	4.4E-008	mg/kg-day	7 3E-001	mg/kg-day	3 2E-008
ין	Benzo(b)Austenthene	2883	ug/kg	2683	ug/kg	M	7.5E-006	mg/kg-day	7.3E-001	mg/kg-day	5.5E-006
	Benzo(a)pyrene	1468	ug/kg	1468	ugArg	M	3 8E-006	mg/kg-day	7.3E+000	mg/kg-dey	2 8E-005
	Indeno(1,2,3-cd)pyrene	1302	ug/kg	1302	ug/kg	M	3.4E-008	mg/kg-day	7 3E-001	mg/kg-day	2.5E-00
	Methoxychlor	650000	ug/kg	650000	ug/kg	M	1.3E-003	mg/kg-dey		mg/kg-day	-
	Aluminum	8432	mg/kg	8432	mg/kg	M	1.7E-003	mg/kg-day	l –	mg/kg-dey	-
1	Aritmony	17	mg/kg	17	mg/kg	M	3.4E-006	mg/kg-day	-	mg/kg-day	-
1	Arsenic	24	mg/kg	24	mg/kg	M	1.4E-005	mg/kg-dey	1 5E+000	mg/kg-dey	2.2E-005
	Copper	1519	mg/kg	1519	mg/kg	M	3.0E-004	mg/kg-day	-	mg/kg-day	-
	Manganese	215	mg/kg	215	mg/kg	M	4.3E-005	mg/kg-day	-	mg/kg-day	-
	Thellum	0.92	mg/kg	0.92	mg/kg	M	1.8E-007	mg/kg-day	-	mg/kg-day	-
۱۱	Veredum	37	mg/kg	37	mg/kg	M	7.4E-006	mg/kg-day		mg/kg-day	8 IE-00

⁽¹⁾ Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

N/A - Not Applicable

⁻⁻⁻ Cancer Slope Factor not available, therefore Cancer Risk not calculated.

TABLE 8 6s RME CALCULATION OF CANCER RISKS REASONABLE MAXIMUM EXPOSURE HORSESHOE ROAD COMPLEX SITE, BAYREVILLE, NEW JERSEY

Scenario Timetrame: Fullire

Medium. Soil

Exposure Medium: Surface Soll Exposure Point: AOC 4 - ARC Receptor Population: Site Workers

Exposure	Chemical	Medum	Medium	Route	Route	EPC	Irleke	triske	Cancer Slope	Cancer Slope	Cencer
Route	of Potertial	EPC	EPC	EPC	EPC	Selected	(Cencer)	(Cencer)	Fector	Dose Units	Risk
	Concern	Value	Units	Value	Units	for Hezerd		Urits	1		
					}	Calculation (1)		İ		}	
estion	Benzo(b) Augranihene	2800	ugkg	2600	ug/kg	N	4.7E-007	mg/kg-day	7 3E-001	mg/kg-day	3 4E-00
	Benzo(a)pyrene	1800	ug/kg	1800	ug/kg	M	3.2E-007	mg/kg-day	7.3E+000	mg/kg-day	2.4E-00
	Hexachlorobutedlene	6800	ug/kg	6800	ug/kg	M	1 2E-008	mg/kg-day	7.8E-002	mg/kg-day	9 5E-00
	Hexactiorocydopertadiene	57440	ug/kg	57440	ug/kg	M	1 0E-005	mg/kg-day	-	mg/kg-dey	-
	Aldrin	22	ug/kg	22	ug/kg	M	4 0E-009	mg/kg-day	1.7E+001	mg/kg-day	6 7E-00
	Arodor-1248	891	ug/kg	891	ug/kg	M	1 6E-007	mg/kg-day	2 0E+000	mg/kg-day	3.2E-00
	Arodor-1254	1941	ug/kg	1941	ug/kg	M	3.5E-007	mg/kg-day	2 0E+000	mg/kg-day	7.0E-00
	Arodor-1260	465	ug/kg	465	ug/kg	M	8.4E-008	mg/kg-day	2 0E+000	mg/kg-day	1.7E-00
	2,3,7,8-TCDD equiv.	0.2	ug/kg	0.2	ug/kg	M	3.6E-011	mg/kg-day	1.5E+005	mg/kg-day	5.4E-00
	Aluminum	15500	mgArg	15500	mg/kg	M	2.8E-003	mg/kg-day	i -	mg/kg-day	-
	Artimony	18	mg/kg	18	mg/kg	M	3.2E-006	mg/kg-day		mg/kg-day	-
	Arseric	27	mg/kg	27	mg/kg	M	4 9E-006	mg/kg-day	1.5E+000	mg/kg-dey	7.3E-00
	Cadmium	37	mg/kg	37	mg/kg	M	6.7E-006	mg/kg-day	-	mg/kg-day	~
	Copper	591	mg/kg	591	mg/kg	M	1 1E-004	mg/kg-day	-	mg/kg-day	-
	Manganese	461	mg/kg	461	mg/kg	M	8 3E-005	mg/kg-day	-	mg/kg-day	-
	Nickel	298	mg/kg	296	mg/kg	M	5.3E-005	mg/kg-day	-	mg/kg-dey	-
	Silver	287	mg/kg	287	mg/kg	M	5 2E-005	mg/kg-day	-	mg/kg-day	-
	Thellium	0.72	mg/kg	0.72	mg/kg	M	1.3E-007	mg/kg-day	-	mg/kg-day	-
	Zhrc	9172	mgArg	9172	mg/kg	M	1.7E-003	mg/kg-day	-	mg/kg-day	_
	(Т	otel)						1		!	1 7E-00
mel	Benzo(b)fluoranthene	2600	ug/kg	2600	ug/kg	M	6 8E-006	mg/kg-day	7 3E-001	mg/kg-day	4 9E-00
	Benzo(a)pyrene	1800	ug/kg	1800	ug/kg	M	4 7E-006	mg/kg-day	7 3E+000	mg/kg-day	3 4E-00
	Hexactionobuladiene	6800	ug/kg	6800	ug/kg	M	1.4E-005	mg/kg-dey	7 8E-002	mg/kg-day	1 1E-00
	Hexachtorocyclopertediene	57440	ug/kg	57440	ug/kg	M	1.1E-004	mg/kg-day	-	mg/kg-day	-
	Aldrin	22	ug/kg	22	ug/kg	M U	4.4E-008	mg/kg-day	1 7E+001	mg/kg-day	7.5E-00
	Aroclor-1248	891	ug/kg	891	ug/kg	M	2.5E-008	mg/kg-day	2 0E+000	mg/kg-dey	5 0E-0
	Arodor-1254	1941	ug/kg	1941	up/kg	M	5.4E-008	mg/kg-day	2 0E+000	mg/kg-day	1 1E-00
	Arodor-1260	485	ug/kg	465	ug/kg	M	1.3E-006	mg/kg-day	2 0E+000	mg/kg-day	2 6E-0
	2.3.7.8-TCDD equiv.	02	ug/kg	0.2	ug/kg	M	1 2E-010	mg/kg-day	1 5E+005	mg/kg-day	1.8E-0
	Aluminum	15500	mg/kg	15500	mg/kg	M	3.1E-003	mg/kg-day	-	mg/kg-day	_
	Artimony	18	mg/kg	18	mg/kg	M	3.6E-006	mg/kg-day	-	mg/kg-day	_
	Arsenic	27	mg/kg	27	mg/kg	M	1 6E-005	mg/kg-day	1 5E+000	mg/kg-day	2 4E-0
	Cadmium	37	mg/kg	37	mg/kg	M	7 4E-007	mg/kg-day	-	mg/kg-day	-
	Copper	591	mgArg	591	mg/kg	M	1 2E-004	mg/kg-day	-	mg/kg-day	_
	Manganese	461	mg/kg	461	mg/kg	M	9.2E-005	mg/kg-day	-	mg/kg-day	-
	Nickel	296	mg/kg	296	mg/kg	M	5 9E-005	mg/kg-dey	-	mg/kg-day	_
	Silver	267	mg/kg	287	mg/kg	M	5.7E-005	mg/kg-day	-	mg/kg-day	_
	Thellum	0.72	mg/kg	0 72	mg/kg	M	1 4E-007	mg/kg-day	ļ <u>-</u>	mg/kg-day	_
	Zinc	9172	mg/kg	9172	mg/kg	м	1 8E-003	mg/kg-day	-	mg/kg-day	_
	1 0	otal)				ļ		1	1		1 0E-00

⁽¹⁾ Medium-Specific (M) or Route-Specific (R) EPC selected for hezard calculation.

TABLE 8.6s.CT CALCULATION OF CANCER RISKS CENTRAL TENDENCY EXPOSURE HORSESHOE ROAD COMPLEX SITE, SAYREVILLE, NEW JERSEY

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Surface Soil
Exposure Point: AOC 4 - ARC
Receptor Population: Site Worters
Receptor Age: Adult

Exposure	Chemical	Medium	Medium	Route	Route	EPC	intake	Intelce	Cancer Stope	Cencer Stope	Cancer
Route	of Potential	EPC	EPC	EPC	EPC	Selected	(Cancer)	(Cancer)	Factor	Dose Units	Risk
	Concern	Value	Units	Value	Units	for Hezerd		Units	l	Į Į	
						Calculation (1)			!		
eston	Benzo(b)Ruoranthene	1884	ugleg	1694	ug/kg	M #	3.9€-608	mg/kg-day	7.3E-001	mg/kg-day	2.8E-00
	Senzo(a)pyrene	1640	ug/kg	1640	ug/kg	M	3.8E-008	mg/kg-day	7.3E+000	mg/kg-day	2.8E-00
	Hexachiorobutadiene	1879	ug/kg	1879	ug/kg	M	4.3E-008	mg/kg-day	7.8E-002	mg/kg-day	3.4E-00
	Hexachlorocyclopentadiene	846	ug/kg	846	ug/kg	M	1.9E-006	mg/kg-day	-	mg/kg-day	_
	Aldrin	1.6	ugAg	1.6	ugAg	M	3.7E-011	mg/kg-day	1.7E+001	mg/kg-day	6.3E-01
	Aroctor-1248	43	ugAq	43	ugArg	M	9.9E-010	mg/kg-day	2.0E+000	mg/kg-day	2.0E-00
	Arodor-1254	62	ug/kg	62	ugAq	M	1.4E-009	mg/kg-day	2.0E+000	mg/kg-day	2.9E-00
	Aroclar-1260	44	ug/kg	44	ug/kg	M	1.0E-009	mg/kg-day	2.0E+000	mg/kg-day	2.0E-00
	2,3,7,6-TCDD equiv.	0.12	ug/kg	0.12	ug/kg	M	2.8E-012	mg/kg-day	1.5E+006	mg/kg-day	4.1E-00
	Aluminum	6918	mg/kg	6918	mg/kg	M	1.6E-004	mg/kg-day	_	mg/kg-day	-
	Antimony	3.5	mg/kg	3.5	mg/kg	\ M	8.1E-006	mg/kg-day	-	mg/kg-day	_
	Arsenic	9.7	mg/kg	9.7	mg/kg	M	2.2E-007	mg/kg-day	1.5E+000	mg/kg-day	3.3E-00
	Cedmium	1.3	mg/kg	1.3	mgArg	W	3.0E-008	mg/kg-day	-	mg/kg-day	-
	Copper	174	mg/kg	174	mg/kg	M	4.0E-006	mg/kg-day	-	mg/kg-day	-
	Mangenese	123	mg/kg	123	mg/kg	w	2.8E-006	mg/kg-day	-	mg/kg-day	-
	Nickel	21	mg/kg	21	mg/kg	M	4.8E-007	mg/kg-day	-	mg/kg-day	-
	Silver	66	mg/kg	66	mg/kg	M	1.5E-006	mg/kg-day	-	mg/kg-day	-
	Thellum	0.53	mg/kg	0.53	mgArg	M	1.2E-008	mg/kg-day	-	mg/kg-day	_
	Zinc (Tot	108	mgArg	106	mgAg	M	2.5E-006	mg/kg-day	-	mg/kg-day	1.1E-0
 Mei	Bergo(b)fluoranthene	1694	ugág	1894	ugág	W	1.0E-006	mg/kg-day	7.3Ē-001	mg/kg-day	7.6E-0
	Benzo(a)pyrene	1640	ugAtg	1640	ug/kg	M	1.0E-006	mg/kg-day	7.3E+000	mg/kg-day	7.3E-00
	Hexachtorobuladene	1879	ug/kg	1879	ug/kg	M	8.8E-007	mg/kg-day	7.8E-002	mg/kg-day	6.9E-00
	Hexachlorocyclopentaciene	846	ugAcg	846	ug/kg	M 1	4.0E-007	mg/kg-day	_	mg/kg-day	-
	Aktrin	1,6	ug/kg	1.6	ug/kg	- M	7.5E-010	mg/kg-day	1.7E+001	mg/kg-day	1.3E-00
	Aroctor-1248	43	ugAg	43	ug/kg	M	2.8E-008	mg/kg-dey	2.0E+000	mg/kg-day	5.7E-00
	Arociar-1254	62	pateg	62	ug/kg	w	4.1E-008	mg/kg-day	2.0E+000	mg/kg-day	8.2E-0
	Arocior-1280	44	pakeu	44	ugAcq	l w	2.9E-008	mg/kg-day	2.0E+000	make-day	5.8E-0
	2,3,7,8-TCDD equiv.	0.12	ugAtg	0.12	ug/kg	M	1.7E-011	mg/kg-day	1.5E+006	mg/kg-day	2.5E-0
	Aluminum	6918	make	6918	mgArg	M	3.3E-004	mg/kg-dey	_	mg/kg-day	_
	Antimony	3.5	maka	3.5	maka	M	1.6E-007	mg/kg-dey	-	maka-day	_
	Arsenic	9.7	mgAq	9.7	mgAvg	- M	1.4E-006	mg/kg-day	1.5E+000	make-day	2.1E-0
	Cedmium	1.3	mg/kg	1.3	mg/kg	M	6.1E-009	mg/kg-day	-	mg/kg-day	_
	Copper	174	mg/kg	174	mg/kg	M	8.2E-006	mg/kg-day	_	mg/kg-day	-
	Manganese	123	maka	123	maka	M	5 8E-006	mg/kg-day	-	mg/kg-day	_
	Nickel	21	maka	21	mg/kg	l M	9.9E-007	mg/kg-day	_	mg/kg-day	_
	Silver	66	maka	66	mg/kg	M	3.1E-006	mg/kg-day	_	mg/kg-day	-
	Thellum	0.53	make	0.53	maka	M	2.5E-008	mg/kg-day	-	mg/kg-day	-
	Zinc	108	maka	108	maka	M	5.1E-008	mg/kg-day	-	mg/kg-day	_
	(Tot	i i	1			I II		1	1	1	1.3E-0

⁽¹⁾ Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

TABLE 8 6b RME CALCULATION OF CANCER RISKS REASONABLE MAXIMUM EXPOSURE HORSESHOE ROAD COMPLEX SITE, SAYREVILLE, NEW JERSEY

Scenario Timeframe. Fulture Mediumi Soil

Exposure Medium: Subsurface Soll Exposure Point. AOC 1 - HRDD Receptor Population. Site Workers Receptor Age Adult

Exposure	Chemical	Medium	Medium	Route	Route	EPC	Intake	Intake	Cancer Slope	Cancer Slope	Cancer
Route	of Potential	EPC	EPC	EPC	EPC	Selected	(Cancer)	(Cancer)	Factor	Factor Units	Risks
	Concern	Válue	Units	Value	Units	for Hezerd	, ,	Units			
						Calculation (1)					
geston		1		. 		}					
	Aroclor-1248	1300	ug/kg	1300	ug/kg	M	2 3E-007	mg/kg-day	2 0E+000	mg/kg-day	4.7E-007
	Aroctor-1254	96	ug/kg	96	ug/kg	M	1.7E-008	mg/kg-day	2 0E+000	mg/kg-day	3.5E-00
	Aroctor-1260	3100	ug/kg	3100	ugAkg	M	5 6E-007	mg/kg-day	2 0E+000	mg/kg-day	1.1E-00
	Aluminum	10685	mg/kg	10685	mg/kg	M	1 9E-003	mg/kg-dey		mg/kg-day	-
	Antimony	51	mg/kg	51	mg/kg	M	9 2E-007	mg/kg-day		mg/kg-day	_
	Arsenic	24.5	mg/kg	24.5	mg/kg	M	4.4E-006	mg/kg-day	1 5E+000	mg/kg-day	6 6E-00
	Cadmium	44	mg/kg	4.4	mg/kg	M	7 9E-007	mg/kg-day		mg/kg-day	
	Copper	1222	mg/kg	1222	mg/kg	M	2 2E-004	mg/kg-day	-	mg/kg-day	_
	Manganese	486	mg/kg	486	mg/kg	M	8 7E-005	mg/kg-dey	-	mg/kg-day	
	Nickel	174	mg/kg	174	mg/kg	M	3.1E-005	mg/kg-day	-	mg/kg-day	
	Thellum	25	mgAkg	25	mg/kg	M	4 5E-007	mg/kg-day		mg/kg-day	_
	Vanadium	50	mg/kg	50	mg/kg	M	9 DE-006	mg/kg-day		mg/kg-day	-
	(Tota	n	1							·	8 2E-00
ermel		1	1			1			·		
	Arocior-1248	1300	ug/kg	1300	ug/kg	M	3 6E-006	mg/kg-day	2 0E+000	mg/kg-day	7 3E-00
	Aroclor-1254	96	ug/kg	96	ug/kg	M	2.7E-007	mg/kg-day	2 0E+000	mg/kg-day	5 4E-00
	Aroclor-1260	3100	ug/kg	3100	ug/kg	M	8 7E-006	mg/kg-day	2 0E+000	mg/kg-day	1.7E-009
	Aluminum	10685	mg/kg	10685	mg/kg	M	2 1E-003	mg/kg-day		mg/kg-day	
	Antimony	5.1	mg/kg	5 1	mg/kg	M	1 0E-006	mg/kg-day		mg/kg-day	
	Arsenic	24 5	mg/kg	24 5	mg/kg	M	1.5E-005	mg/kg-day	1.5E+000	mg/kg-day	2 2E-00
	Cadmium	4.4	mg/kg	4.4	mg/kg	M	8 8E-008	mg/kg-day	-	mg/kg-day	
	Copper	1222	mg/kg	1222	mg/kg	M	2 4E-004	mg/kg-day	-	mg/kg-day	
	Manganese	486	mg/kg	486	mg/kg	M	9.7E-005	mg/kg-day		mg/kg-day	
	Nickel	174	mg/kg	174	mg/kg	M	3 5E-005	mg/kg-day		mg/kg-day	
	Theilium	25	mg/kg	25	mg/kg	M	5 0E-007	mg/kg-day	_	mg/kg-day	-
	Vanedium	50	mg/kg	50	mg/kg	M	1 0E-005	mg/kg-day	1 -	mg/kg-day	_
	(Tota	n				1		-			4 7E-00

⁽¹⁾ Medium-Specific (M) or Roule-Specific (R) EPC selected for hazard calculation

N/A - Not Applicable

⁻⁻⁻ Cancer Slope Factor not available, therefore Cancer Risk not calculated

TABLE 8.6b.RME CALCULATION OF CANCER RISKS REASONABLE MAXIMUM EXPOSURE HORSESHOE ROAD COMPLEX SITE, SAYREVILLE, NEW JERSEY

Scenario Timeframe: Future

Medium: Soil

Exposure Medium: Test Pit Soil
Exposure Point: AOC 1 - HRDD
Receptor Population: Site Workers

Exposure	Chemical	Medium	Medium	Route	Route	EPC	intake	Intake	Cancer Slope	Cancer Slope	Cancer
Route	of Potential	EPC:	EPC	EPC	EPC	Selected	(Cancer)	(Cancer)	Factor	Factor Units	Risks
	Concern	Value	Units	Value	Units	for Hazard	,	Units	}		
						Calculation (1)					
ngestion	Benzo(a)pyrene	1348	ug/kg	1346	ug/kg	M	2.4E-007	mg/kg-day	7.3E+000	mg/kg-day	1.8E-006
	Aroclor-1248	41000	ug/kg	41000	ug/kg	M	7.4E-008	mg/kg-day	2.0E+000	mg/kg-day	1.5E-005
	Aroclor-1254	6200	ug/kg	6200	ug/kg	M	1.1E-006	mg/kg-day	2.0E+000	mg/kg-day	2.2E-008
	Antimony	1308	mg/kg	1308	mg/kg	M	2.4E-004	mg/kg-day	-	mg/kg-day	-
	Arsenic	707	mg/kg	707	mg/kg	M	1.3E-004	mg/kg-day	1.5E+000	mg/kg-day	1.9E-004
	(Total)		·								2.1E-004
ernal	Benzo(a)pyrene	1346	ug/kg	1346	ug/kg	M	3.5E-006	mg/kg-day	7.3E+000	mg/kg-day	2.6E-005
	Aroclor-1248	41000	ug/kg	41000	ug/kg	M	1.1E-004	mg/kg-day	2.0E+000	mg/kg-day	2.3E-004
	Aroclor-1254	6200	ug/kg	6200	ug/kg	M .	1.7E-005	mg/kg-day	2.0E+000	mg/kg-day	3.5E-005
	Antimony	1308	mg/kg	1308	mg/kg	M	2.6E-004	mg/kg-day	_	mg/kg-day	~
	Arsenic	707	mg/kg	707	. mg/kg	M	4.2E-004	mg/kg-day	1.5E+000	mg/kg-day	8.4E-004
	(Total)										9.3E-004

⁽¹⁾ Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

⁻⁻⁻ Cancer Slope Factor not available, therefore Cancer Risk not calculated. N/A - Not Applicable.

TABLE 8.6b.CT CALCULATION OF CANCER RISKS CENTRAL TENDENCY EXPOSURE HORSESHOE ROAD COMPLEX SITE, SAYREVILLE, NEW JERSEY

Scenario Timeframe: Future

Medium: Soil

Exposure Medium: Test Pit Soil
Exposure Point: AOC 1 - HRDD
Receptor Population: Site Workers

Exposure Route	Chemical of Potential	Medium EPC	Medium EPC	Route EPC	Route EPC	EPC Selected	Intake (Cancer)	Intake (Cancer)	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risks
	Concern	Value	Units	Value	Units	for Hazard Calculation (1)		Units			
gestion	Benzo(a)pyrene	184	ug/kg	184	ug/kg		4.2E-009	mg/kg-day	7.3E+000	mg/kg-day	3.1E-008
	Aroclor-1248	3882	ug/kg	3882	ug/kg	M	8.9E-008	mg/kg-day	2.0E+000	mg/kg-day	1.8E-007
	Aroclor-1254	1105	ug/kg	1105	ug/kg	M	2.5E-008	mg/kg-day	2.0E+000	mg/kg-day mg/kg-day mg/kg-day mg/kg-day mg/kg-day	5.1E-008
	Antimony	3.2	mg/kg	3.2	mg/kg	M	7.4E-008	mg/kg-day	-		•
	Arsenic	33	mg/kg	33	mg/kg	м	7.6E-007	mg/kg-day	1.5E+000		1.1E-008
	(Total)		1			1					1.4E-008
ermal	Benzo(a)pyrene	184	ug/kg	184	ug/kg	M	1.1E-007	mg/kg-day	7.3E+000	mg/kg-day	8.2E-007
	Aroclor-1248	3882	ug/kg	3882	ug/kg	- M	2.6E-006	mg/kg-day	2.0E+000	mg/kg-day mg/kg-day	5.1E-008
	Aroclor-1254	1105	ug/kg	1105	ug/kg	M	7.3E-007	mg/kg-day	2.0E+000	mg/kg-day	1.5E-008
	Antimony	3.2	mg/kg	3.2	mg/kg	м	1.5E-007	mg/kg-day		mg/kg-day	-
	Arsenic	33	mg/kg	33	mg/kg	M	4.7E-006	mg/kg-day	1.5E+000	mg/kg-day	7.0E-008
	(Totai)				}	1				1	1.4E-005

⁽¹⁾ Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

⁻ - Cancer Slope Factor not available, therefore Cancer Risk not calculated. $\mbox{N/A}$ - Not Applicable.

TABLE 8.6b RME CALCULATION OF CANCER RISKS REASONABLE MAXIMUM EXPOSURE HORSESHOE ROAD COMPLEX SITE, SAYREVILLE, NEW JERSEY

Scenario Timeframe: Future

Medium: Soit

Exposure Medium: Subsurface Soil

Exposure Point: AOC 2 - ADC Receptor Population: Site Workers

Exposure	Chemical	Medium	Medium	Route	Route	EPC	Intake	Intake	Cancer Slope	Cancer Slope	Cancer
Route	of Potential	EPC	EPC	EPC	EPC	Selected	(Cancer)	(Cancer)	Factor	Factor Units	Risks
	Concern	Value	Units	Value	Units	for Hazerd		Units		[[
					į	Calculation (1)					
				<u> </u>							
gestion	1,2-Dichloroethane	390000	ug/kg	390000	ug/kg	M	7.0E-005	mg/kg-day	9 1E-002	mg/kg-day	6.4E-006
	Benzo(b)fluoranthene	3149	ug/kg	3149	ug/kg	M	5.7E-007	mg/kg-day	7.3E-001	mg/kg-day	4.1E-007
	Benzo(a)pyrene	4713	ug/kg	4713	ug/kg	M	8.5E-007	mg/kg-day	7.3E+000	mg/kg-day	6.2E-006
	Methoxychlor	760000	ug/kg	760000	ug/kg	M	1.4E-004	mg/kg-day		mg/kg-day	
	Arocior-1242	10538	ug/kg	10538	ug/kg	M	1.9E-006	mg/kg-day	2.0E+000	mg/kg-day	3.8E-006
	Aroclor-1248	74000	ug/kg	74000	ug/kg	M	1.3E-005	mg/kg-day	2.0E+000	mg/kg-day	2.7E-005
	Arsenic	828	mg/kg	828	mg/kg	M	1.5E-004	mg/kg-day	1.5E+000	mg/kg-day	2.2E-004
	Thellium	1.8	mg/kg	1.8	mg/kg	M	3.2E-007	mg/kg-day	-	mg/kg-day	
	(Total)		ļ		ļ			ļ		`	2.7E-004
Dermai	1,2-Dichloroethane	390000	ug/kg	390000	ug/kg	M	7.8E-003	mg/kg-day	9.1E-002	mg/kg-day	7.1E-004
	Benzo(b)fluoranthene	3149	ug/kg	3149	ug/kg	M	8.2E-006	mg/kg-day	7.3E-001	mg/kg-day mg/kg-day mg/kg-day mg/kg-day	6.0E-006
	Benzo(a)pyrene	4713	ug/kg	4713	ug/kg	M	1.2E-005	mg/kg-day	7.3E+000	mg/kg-day	8.9E-005
	Methoxychlor	760000	ug/kg	760000	ug/kg	М '	1.5E-003	mg/kg-day		mg/kg-day	
	Aroclor-1242	10538	ug/kg	10538	ug/kg	. M	3.0E-005	mg/kg-day	2.0E+000	mg/kg-day	5.9E-005
	Aroclor-1248	74000	ug/kg	74000	ug/kg	M	2.1E-004	mg/kg-day	2.0E+000	mg/kg-day	4.1E-004
	Arsenic	828	mg/kg	828	mg/kg	M	5.0E-004	mg/kg-day	1.5E+000	mg/kg-day	7.5E-004
	Thellium	1.8	mg/kg	1.8	mg/kg	M	3.6E-007	mg/kg-day	-	mg/kg-day	
	(Total)			1		1			1		2.0E-003

⁽¹⁾ Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

⁻⁻⁻ Cancer Slope Factor not available, therefore Cancer Risk not calculated. N/A - Not Applicable.

TABLE 8.6b.CT CALCULATION OF CANCER RISKS CENTRAL TENDENCY EXPOSURE HORSESHOE ROAD COMPLEX SITE, SAYREVILLE, NEW JERSEY

Scenario Timeframe: Future

Medium: Soil

Exposure Medium: Subsurface Soil Exposure Point: AOC 2 - ADC

Receptor Population: Site Workers

Exposure	Chemical	Medium	Medium	Route	Route	EPC	Intake	Intake	Cancer Slope	Cancer Slope	Cancer
Route	of Potential	EPC	EPC	EPC	EPC	Selected	(Cancer)	(Cancer)	Factor	Factor Units	Risks
	Concern	Value	Units	Valu e	Units	for Hazard		Units	Į.		
				·		Calculation (1)					,
ngestion	1,2-Dichloroethane	26703	ug/kg	28703	ug/kg	M	6.1E-007	mg/kg-day	9.1E-002	mg/kg-day	5.6E-008
	Benzo(b)fluoranthene	490	ug/kg	490	ug/kg	M	1.1E-008	mg/kg-day	7.3E-001	mg/kg-day	8.2E-009
	Benzo(a)pyrene	583	ug/kg	563	ug/kg	M	1.3E-008	mg/kg-day	7.3E+000	mg/kg-day	9.5E-008
	Methoxychlor	64833	ug/kg	64833	ug/kg	M	1.5E-006	mg/kg-day	-	mg/kg-day	_
	Aroclor-1242	76.8	ug/kg	76.8	ug/kg	M	1.8E-009	mg/kg-day	2.0E+000		3.5E-009
	Aroclor-1248	7261	ug/kg	7261	ug/kg	M	1.7E-007	mg/kg-day	2.0E+000	mg/kg-day	3.3E-007
	Arsenic	21	mg/kg	21	mg/kg	M	4.8E-007	mg/kg-day	1.5E+000	mg/kg-day	7.2E-007
	Thallium	1	mg/kg	1	mg/kg	M	2.3E-008	mg/kg-day	_	mg/kg-day mg/kg-day	_
	(Tot	al)						1			1.2E-008
ermal	1,2-Dichloroethane	28703	ug/kg	26703	ug/kg	M	1.3E-004	mg/kg-day	9.1E-002	mg/kg-day	1.1E-005
	Benzo(b)fluoranthene	490	ug/kg	490	ug/kg	M .	3.0E-007	mg/kg-day	7.3E-001	mg/kg-day mg/kg-day mg/kg-day mg/kg-day mg/kg-day mg/kg-day mg/kg-day mg/kg-day	2.2E-007
	Benzo(a)pyrene	583	ug/kg	563	ug/kg	M	3.4E-007	mg/kg-day	7.3E+000		2.5E-008
	Methoxychlor	64833	ug/kg	64833	ug/kg	M	3.0E-005	mg/kg-day		mg/kg-day	-
	Aroclor-1242	76.8	ug/kg	76.8	ug/kg	M	5.1E-008	mg/kg-day	2.0E+000	mg/kg-day	1.0E-007
	Aroclor-1248	7281	ug/kg	7261	ug/kg	- M	4.8E-006	mg/kg-day	2.0E+000	mg/kg-day	9.6E-008
	Arsenic	21	mg/kg	21	mg/kg	M	3.0E-006	mg/kg-day	1.5E+000	mg/kg-day	4.4E-008
	Thallium	1	mg/kg	1	mg/kg	M	4.7E-008	mg/kg-day	-	mg/kg-day	
	(Tol	al)				1			1		2.8E-005

⁽¹⁾ Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

⁻⁻ Cancer Slope Factor not available, therefore Cancer Risk not calculated. N/A - Not Applicable.

TABLE 8.6b.RME CALCULATION OF CANCER RISKS REASONABLE MAXIMUM EXPOSURE HORSESHOE ROAD COMPLEX SITE, SAYREVILLE, NEW JERSEY

Scenario Timeframe: Future

Medium: Soil

Exposure Medium: Subsurface Soil

Exposure Point: AOC 3 - SPD

Receptor Population: Site Workers

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risks
ngestion										700 200 200 200 CA	ert exceptionalis
	Benzo(a)pyrene	93	ug/kg	93	ug/kg	M	1.7E-008	mg/kg-day	7.3E+000	mg/kg-day	1.2E-007
	Aroclor-1254	184	ug/kg	164	ug/kg	M '	3.0E-008	mg/kg-day	2.0E+000	mg/kg-day	5.9E-008
	Aroclor-1260	176	ug/kg	176	ug/kg	M	3.2E-008	mg/kg-day	2.0E+000	mg/kg-day	6.3E-008
	Methoxychlor	18000	ug/kg	18000	ug/kg	M	3.2E-006	mg/kg-day		mg/kg-day	
	Aluminum	9082	mg/kg	9082	mg/kg	M	1.6E-003	mg/kg-day	-	mg/kg-day	-
	Antimony	0.83	mg/kg	0.83	mg/kg	M	1.5E-007	mg/kg-day	-	mg/kg-day	-
	Arsenic	29	mg/kg	29	mg/kg	M	5.2E-006	mg/kg-day	1.5E+000	mg/kg-day	7.8E-006
	Cadmium	0.67	mg/kg	0.67	mg/kg	M	1.2E-007	mg/kg-day	-	mg/kg-day	-
	Manganese	197	mg/kg	197	mg/kg	M	3.5E-005	mg/kg-day	-	mg/kg-dey	_
	Thellum	1.2	mg/kg	1.2	mg/kg	M	2.2E-007	mg/kg-day	-	mg/kg-day	-
	Vanadium	33	mg/kg	33	mg/kg	M	5.9E-006	mg/kg-day	-	mg/kg-day	
	(Total)		Į.								8.1E-006
ermal											
	Benzo(a)pyrene	93	ugAkg	93	ug/kg	M	2.4É-007	mg/kg-day	7.3E+000	mg/kg-day	1.8E-006
	Aroclor-1254	164	ug/kg	164	ug/kg	M	4.6E-007	mg/kg-day	2.0E+000	mg/kg-day	9.2E-007
	Aroclor-1260	176	ug/kg	176	u g/ kg	M	4.9E-007	mg/kg-day	2.0E+000	mg/kg-day	9.9E-007
	Methoxychlor	18000	ug/kg	18000	u g/ kg	M ·	3.6E-002	mg/kg-day	-	mg/kg-day	-
	Aluminum	9082	mg/kg	9082	mg/kg	M '	1.8E-003	mg/kg-day	-	mg/kg-day	
	Antimony	0.83	mg/kg	0.83	mg/kg	M .	1.7E-007	mg/kg-day	-	mg/kg-day	-
	Arsenic	29	mg/kg	29	mg/kg	M	1.7E-005	mg/kg-day	1.5E+000	mg/kg-day	2.6E-005
	Cadmium	0.67	mg/kg	0.67	mg/kg	M	1.3E-008	mg/kg-day	-	mg/kg-day	-
	Manganese	197	mg/kg	197	mg/kg	M	3.9E-005	mg/kg-day	-	mg/kg-day	-
	Thellium	1.2	mg/kg	1.2	mg/kg	M	2.4E-007	mg/kg-day	-	mg/kg-day	-
	Vanadium	33	mg/kg	33	mg/kg ·	M	6.6E-006	mg/kg-day	-	mg/kg-day	l
	(Total)					1		1	1	1	3.0E-005

⁽¹⁾ Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

⁻⁻⁻ Cancer Slope Factor not available, therefore Cancer Risk not calculated. N/A - Not Applicable.

TABLE 8.6b.RME CALCULATION OF CANCER RISKS REASONABLE MAXIMUM EXPOSURE HORSESHOE ROAD COMPLEX SITE, SAYREVILLE, NEW JERSEY

Scenario Timetrame: Future

Medium: Soif

Ekposure Medium: Test Pit Sdil Exposure Point: AOC 3 - SPD Receptor Population: Site Workers

Exposure	Chemical	Medium	Medium	Route	Route	EPC	intake	Intake	Cancer Stope	Cancer Slope	Cancer
Route	of Potential	EPC	EPC	EPC	EPC	Selected	(Cancer)	(Cancer)	Factor	Factor Units	Risks
:	Concern	Value	Units	Value	Units	for Hazard Calculation (1)		Units			
gestion					Provide the state of the state			 			
	Hexachloroethane	10,201,148	ug/kg	10,201,148	ug/kg	M	1.8E-003	mg/kg-day	1.4E-002	mg/kg-day	2.6E-005
	Benzo(a)pyrene	4700	ug/kg	4700	ug/kg	М .	8.5E-007	mg/kg-day	7.3E+000		6.2E-006
	Dibenzo(a,h)anthracene	920	ug/kg	920	ug/kg	M	1.7E-007	mg/kg-day	7.3E+000		1.2E-006
	Aroclor-1248	21000	ug/kg	21000	ug/kg	м	3.8E-006	mg/kg-day	2.0E+000	mg/kg-day	7.6E-006
	Aroclor-1254	6000	ug/kg	6000	ug/kg	M	1.1E-006	mg/kg-day	2.0E+000	mg/kg-day	2.2E-006
	Arsenic	77	mg/kg	77	mg/kg	M	1.4E-005	mg/kg-day	1.5E+000	mg/kg-day	2.1E-005
	Copper	32300	mg/kg	32300	mg/kg	M	5.8E-003	mg/kg-day	_	mg/kg-day mg/kg-day mg/kg-day mg/kg-day mg/kg-day mg/kg-day	
	(Total)			•							6.4E-005
ermal											
	Hexachioroethane	10,201,148	ug/kg	10,201,148	ug/kg	M	2.0E-002	mg/kg-day	1.4E-002	mg/kg-day	2.9E-004
	Benzo(a)pyrene	4700	ug/kg	4700	ug/kg	M	1.2E-005	mg/kg-day	7.3E+000	mg/kg-day	8.9E-005
	Dibenzo(a,h)anthracene	920	ug/kg	920	ug/kg	М	2.4E-006	mg/kg-day	7.3E+000	mg/kg-day	1.7E-005
	Aroclor-1248	21000	ug/kg	21000	ug/kg	M	5.9E-005	mg/kg-day	2.0E+000	mg/kg-day	1.2E-004
	Aroclor-1254	6000	ug/kg	6000	ug/kg	М	1.7E-005	mg/kg-day	2.0E+000	mg/kg-day	3.4E-005
	Arsenic	77	mg/kg	77	mg/kg	M	4.6E-005	mg/kg-day	1.5E+000	mg/kg-day	6.9E-005
	Соррег	32300	mg/kg	32300	mg/kg	M	6.5E-003	mg/kg-day	(–	mg/kg-day	<u>-</u>
	(Total)							1	[.		6.1E-004

⁽¹⁾ Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

⁻⁻⁻ Cancer Slope Factor not available, therefore Cancer Risk not calculated.

N/A - Not Applicable.

TABLE 8.6b.CT CALCULATION OF CANCER RISKS CENTRAL TENDENCY EXPOSURE HORSESHOE ROAD COMPLEX SITE, SAYREVILLE, NEW JERSEY

Scenario Timeframe: Future

Medium: Soil

Exposure Medium: Test Pit Soil
Exposure Point: AOC 3 - SPD
Receptor Population: Site Workers

Exposure	Chemical	Medium	Medium	Route	Route	EPC	Intake	Intake	Cancer Slope	Cancer Slope	Cancer
Route	of Potential	EPC	EPC	EPC	EPC	Selected	(Cancer)	(Cancer)	Factor	Factor Units	Risks
	Concern	Value	Units	Value	Units	for Hazard		Units	1		
						Calculation (1)					
ngestion				The state of the s	Management of the second of th						
	Hexachloroethane	1751	ug/kg	1751	ug/kg	M	4.0E-008	mg/kg-day	1.4E-002	mg/kg-day	5.8E-010
	Benzo(a)pyrene	2000	ug/kg	2000	ug/kg	M	4.6E-008	mg/kg-day	7.3E+000	mg/kg-day	3.4E-007
	Dibenzo(a,h)anthracene	920	ug/kg	920	ug/kg	M	2.1E-008	mg/kg-day	7.3E+000	mg/kg-day	1.5E-007
	Aroclor-1248	3331	ug/kg	3331	ug/kg	M	7.7E-008	mg/kg-day	2.0E+000	mg/kg-day	1.5E-007
	Arocior-1254	784	ug/kg	764	ug/kg	M	1.8E-008	mg/kg-day	2.0E+000	mg/kg-day	3.5E-008
	Arsenic	21.5	mg/kg	21.5	mg/kg	M	4.9E-007	mg/kg-day	1.5E+000	mg/kg-day	7.4E-007
	Copper	3502	mg/kg	3502	mg/kg	M	8.1E-005	mg/kg-day	-	mg/kg-day	_
	(Total)		1					1			1.4E-008
lerma!											
	Hexachloroethane	1751	ug/kg	1751	ug/kg	M	8.2E-007	mg/kg-day	1.4E-002	mg/kg-day	1.2E-008
	Benzo(a)pyrene	2000	ug/kg	2000	ug/kg	M	1.2E-006	mg/kg-day	7.3E+000	mg/kg-day	8.9E-006
	Dibenzo(a,h)anthracene	920	ug/kg	920	ug/kg	M	5.6E-007	mg/kg-day	7.3E+000	mg/kg-day	4.1E-008
	Aroclor-1248	3331	ug/kg	3331	ug/kg	M	2.2E-006	mg/kg-day	2.0E+000	mg/kg-day	4.4E-008
	Aroclor-1254	764	ug/kg	764	ug/kg	M	5.0E-007	mg/kg-day	2.0E+000	mg/kg-day	1.0E-008
	Arsenic	21.5	mg/kg	21.5	mg/kg	М	3.0E-006	mg/kg-day	1.5E+000	mg/kg-day	4.5E-008
	Copper	3502	mg/kg	3502	mg/kg	M	1.6E-004	mg/kg-day	-	mg/kg-day	l. –
	(Total)					'			1		2.3E-005

⁽¹⁾ Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

⁻ - Cancer Stope Factor not available, therefore Cancer Risk not calculated. $\ensuremath{\mathsf{N}}\xspace/\mathsf{A}$ - Not Applicable.

400345

TABLE 8.6b.RME CALCULATION OF CANCER RISKS REASONABLE MAXIMUM EXPOSURE HORSESHOE ROAD COMPLEX SITE, SAYREVILLE, NEW JERSEY

Scenario Timeframe: Future

Medium: Soil

Exposure Medium: Subsurface Soil Exposure Point: AOC 4 - ARC Receptor Population: Site Workers

Exposure	Chemical	Medium	Medium	Route	Route	EPC	intake	intake	Cancer Slope	Cancer Slope	Cancer
Route	of Potential	EPC	EPC	EPC	EPC	Selected	(Cancer)	(Cancer)	Factor	Factor Units	Risks
	Concern	Value	Units	Value	Units	for Hazard		Units			!
						Calculation (1)					ı
gestion	Tetrachloroethene	19252	ug/kg	19252	ug/kg	 	3.5E-006	mg/kg-day	5.2E-002	mg/kg-day	1.8E-00
	Chlorobenzene	29736	ug/kg	29736	ug/kg	M	5.4E-008	mg/kg-day		mg/kg-day	
	Benzo(a)anthracene	793	ug/kg	793	ug/kg	М	1.4E-007	mg/kg-day	7.3E-001	mg/kg-day	1.0E-007
	Benzo(b)fluoranthene	830	ug/kg	830	ug/kg	M -	1.5E-007	mg/kg-day	7.3E-001	mg/kg-day	1.1E-00
	Benzo(a)pyrene	767	ug/kg	767	ug/kg	M	1.4E-007	mg/kg-day	7.3E+000	mg/kg-day	1.0E-00
	Indeno(1,2,3-cd)pyrene	693	ug/kg	693	ug/kg	M	1.2E-007	mg/kg-day	7.3E-001	mg/kg-day	9.1E-00
	1,2,4-Trichlorobenzene	112687	ug/kg	112687	ug/kg	M	2.0E-005	mg/kg-day	_	mg/kg-day	_
	Aldrin	5.7	ug/kg	5.7	ug/kg	M (1.0E-009	mg/kg-day	1.7E+001	mg/kg-day	1.7E-008
	Aroclor-1248	149	ug/kg	149	ug/kg	M	2.7E-008	mg/kg-day	2.0E+000	mg/kg-day	5.4E-008
	Aroctor-1254	56	ug/kg	56	ug/kg	M	1,0E-008	mg/kg-day	2.0E+000	mg/kg-day	2.0E-00
	Aluminum	13018	mg/kg	13018	mg/kg	М	2.3E-003	mg/kg-day		mg/kg-day	
	Antimony	2.1	mg/kg	2.1	mg/kg	M	3.8E-007	mg/kg-day		mg/kg-day	
	Arsenic	13	mg/kg	13	mg/kg	M	2.3E-008	mg/kg-day	1.5E+000	mg/kg-day	3.5E-00
	Manganese	133	mg/kg	133	mg/kg	M	2.4E-005	mg/kg-day	_	mg/kg-day	
	Thallium	1.1	mg/kg	1.1	mg/kg	M	2.0E-007	mg/kg-day	_	mg/kg-day	-
	Vanadium	43	mg/kg	43	mg/kg	M	7.7E-008	mg/kg-day		mg/kg-day	_
	(Та	tal)	1						•		5.1E-00
ermaf	Tetrachloroethene	19252	ug/kg	19252	ug/kg	M	3.9E-004	mg/kg-day	5.2E-002	mg/kg-day	2.0E-00
	Chlorobenzene	29736	ug/kg	29736	ug/kg	M	5.9E-004	mg/kg-day	_	mg/kg-day	
	Benzo(a)anthracene	793	ug/kg	793	ug/kg	M	2.1E-006	mg/kg-day	7.3E-001	mg/kg-day	1.5E-00
	Benzo(b)fluoranthene	830	ug/kg	830	ug/kg	M	2.2E-008	mg/kg-day	7.3E-001	mg/kg-day	1.6E-00
	Benzo(a)pyrene	767	ug/kg	767	ug/kg	M	2.0E-008	mg/kg-day	7.3E+000	mg/kg-day	1.5E-00
	Indeno(1,2,3-cd)pyrene	693	ug/kg	693	ug/kg	M	1.8E-006	mg/kg-day	7.3E-001	mg/kg-day	1.3E-00
	1,2,4-Trichlorobenzene	112687	ug/kg	112687	ug/kg	M	2.3E-004	mg/kg-day	_	mg/kg-day	
	Aldrin	5.7	ug/kg	5.7	ug/kg	M)	1.1E-008	mg/kg-day	1.7E+001	mg/kg-day	1.9E-00
	Aroclor-1248	149	ug/kg	149	ug/kg	M	4.2E-007	mg/kg-day	2.0E+000	mg/kg-day	8.3E-00
	Aroclor-1254	56	ug/kg	56	ug/kg	M	1.6E-007	mg/kg-day	2.0E+000	mg/kg-day	3.1E-00
	Aluminum	13018	mg/kg	13018	mg/kg	M	2.6E-003	mg/kg-day	- '	mg/kg-day	
	Antimony	2.1	mg/kg	2.1	mg/kg	M	4.2E-007	mg/kg-day	-	mg/kg-day	
	Arsenic	13	mg/kg	13	mg/kg	M	7.8E-006	mg/kg-day	1.5E+000	mg/kg-day	1.2E-00
	Manganese	133	mg/kg	133	mg/kg	M	2.7E-005	mg/kg-day	_	mg/kg-day	
	Thallium	1.1	mg/kg	1.1	mg/kg	M	2.2E-007	mg/kg-day	_	mg/kg-day	
	Vanadium	43	mg/kg	43	mg/kg	M	8.6E-008	mg/kg-day		mg/kg-day	
	Į (To	tal)	į			1		1	1	1	5.2E-00

⁽¹⁾ Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

TABLE 8.78.RME CALCULATION OF CANCER RISKS REASONABLE MAXIMUM EXPOSURE HORSESHOE ROAD COMPLEX SITE, SAYREVILLE, NEW JERSEY

Scenario Timetrame: Future
Medium: Soil
Exposure Medium: Surface Soil
Exposure Point: AOC 1 - HRDD
Reteptor Population: Construction Workers
Receptor Age: Adult

Exposure	Chemical	Medium	Medium	Route	Route	EPC	intake	Intake	Cancer Slope	Cancer Stope	Carncer
Route	of Potential	EPC	EPC	EPC	EPC	Selected	(Cancer)	(Cencer)	Factor	Dose Units	Risk
	Cóncem	Value	Units	Value	Urits	for Hazard Calculation (1)		Units			
	Delah	120					The second		 		
rgestion		1	ug/kg	120	ug/kg	M	2.0E-009	mg/kg-day	1.6E+001	mg/kg-day	3.3E-008
	Arodor-1248	9500	u g/ kg	9500	⊔g/kg	M	1.6E-007	mg/kg-day	2.0E+000	mg/kg-day	3.2E-007
	Arodor-1254	850	ug/kg	850	ug/kg	M	1.4E-008	mg/kg-day	2.0E+000	mg/kg-day	2.9E-008
	Arodor-1260	720	ug/kg	720	ug/kg	M	1.2E-008	mg/kg-day	2.0E+000	mg/kg-day	2.4E-008
	Aluminum	14250	mg/kg	14250	mg/kg	М	2.4E-004	mg/kg-day	-	mg/kg-day	-
	Antimony	3.4	mg/kg	3.4	mg/kg	M	5.8E-008	mg/kg-day		mg/kg-day	-
	Arseric	53	mgAkg	53	mg/kg	, M	9.0E-007	mg/kg-day	1.5E+000	mg/kg-day	1.4E-006
	Cadmium	4.5	mg/kg	4.5	mg/kg	M	7.7E-008	mg/kg-day	-	mg/kg-day	-
	Copper	433	. mg/kg	433	mg/kg	M	7.4E-006	mg/kg-day	-	mg/kg-day	-
	Manganese	420	mg/kg	420	mg/kg	M	7.1E-008	mg/kg-day	-	mg/kg-day	-
	Nickel	108	mg/kg	108	mg/kg	М	1.8E-006	mg/kg-day	-	mg/kg-day .	-
	Silver	30	mg/kg	30	mg/kg	M	5.1E-007	mg/kg-day	-	mg/kg-day	-
	Thellum	1	mg/kg	. 1	mg/kg	M	1.7E-008	mg/kg-day	-	mg/kg-day	-
	Venedium	64	mg/kg	64	mg/kg	M	1.1E-008	mg/kg-day	-	mg/kg-day	-
	(Total)	1	_1								1.8E-006
lerms!	Dieldrin	120	ug/kg	120	ug/kg	M	2.6E-009	mg/kg-day	1.6E+001	mg/kg-day	4.2E-008
	Arodor-1248	9500	ug/kg	9500	ug/kg	M	2.9E-007	mg/kg-day	2.0E+000	mg/kg-day	5.9E-007
	Arodor-1254	850	ug/kg	850	ug/kg	M	2.6E-008	mg/kg-day	2.0E+000	mg/kg-day	5.2E-008
	Arador-1260	720	ug/kg	720	ug/kg	M	2.2E-008	mg/kg-day	2.0E+000	mg/kg-day	4.4E-008
	Aluminum	14250	mg/kg	14250	mg/kg	M	3.1E-005	mg/kg-day	-	mg/kg-day	-
	Antimony	3.4	mg/kg	3.4	mg/kg	M	7.5E-009	mg/kg-day	-	mg/kg-day	-
	Arseric	53	mg/kg	53	mg/kg	M	3.5E-007	mg/kg-day	1.5E+000	mg/kg-day	5.2E-007
	Cadmium	4.5	mg/kg	4.5	mg/kg	M	9.9E-010	mg/kg-day	-	mg/kg-day	-
	Copper	433	mg/kg	433	mg/kg	M	9.5E-007	mg/kg-day	-	mg/kg-day	-
	Manganese	420	mg/kg	420	mg/kg	M	9.2E-007	mg/kg-day	-	mg/kg-day	_
	Nickel	108	mg/kg	108	mg/kg	M	2.4E-007	mg/kg-day	-	mg/kg-day	_
	Silver	- 30	mg/kg	30	mg/kg	. M	6.6E-008	mg/kg-day	_	mg/kg-day	-
	Thellium	1,	mg/kg	1	mg/kg	. м	2.2E-009	mg/kg-day	_	mg/kg-day	
	Vanadium	64	mg/kg	64	mg/kg	M	1.4E-007	mg/kg-day	-	mg/kg-day	
	(Total)							' ' '	1		1.2E-00

⁽¹⁾ Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

 ⁻ Cancer Stope Factor not available, therefore Cancer Rtsk not calculated.
 N/A - Not Applicable.

TABLE 8.7a RME CALCULATION OF CANCER RISKS REASONABLÉ MAXIMUM EXPOSURE HORSESHOE ROAD COMPLEX SITE, SAYREVILLE, NEW JERSEY

Scenario Timeframe: Future Medium: Soil

Exposure Medium: Surface Soil

Exposure Point: AOC 2 - ADC

Receptor Population: Construction Workers

Receptor Age: Adult

Exposure	Chemical	Metfum	Medium	Route	Route	EPC	Intake	Intake	Cancer Stope	Cencer Stope	Cencer
Route	of Potential	EPC	EPC	EPC	€ PC	Selected	(Cancer)	(Cancer)	Fector	Dose Units	Risk
	Concern	Value	Units	Value	Units	for Hezerd		Urits			
				}	i	Calculation (1)					
gestion	Benzo(s)enthracene	21000	ug/kg	21000	ug/kg	M	3.6E-007	mg/kg-day	7.3E-001	mg/kg-day	2.6E-007
	Benzo(b)fluoranthene	30000	ug/kg	30000	ug/kg	M	5.1E-007	mg/kg-day	7.3E-001	mg/kg-day	3.7E-007
	Benzo(s)pyrene	20000	ug/kg	20000	ug/kg	M	3.4E-007	mg/kg-day	7.3E+000	mg/kg-day	2.5E-006
	Indeno(1,2,3-cd)pyrene	12000	ug/kg	12000	ug/kg	M	2.0E-007	mg/kg-day	7.3E-001	Dose Units mg/kg-day mg/kg-day	1.5E-007
	Dibenzo(a,h)anthracene	2300	ug/kg	2300	ug/kg	M	3.9E-008	mg/kg-day	7.3E+000	mg/kg-day	2.9E-007
	Aldrin	400	ug/kg	400	ug/kg	м	6.8E-009	mg/kg-day	1.7E+001	mg/kg-day	1.2E-007
	Diefdrin	740	ug/kg	740	ug/kg	м	1.3E-008	mg/kg-day	1.6E+001	mg/kg-day	2.0E-007
	Methoxychlor	980000	ug/kg	980000	ug/kg	M I	1.7E-005	mg/kg-day		mg/kg-day	~
	Arodor-1248	34000	ug/kg	34000	ug/kg	, M	5.8E-007	mg/kg-day	2.0E+000	mg/kg-day	1.2E-006
	Arodor-1260	2500	ug/kg	2500	ug/kg	M	4.3E-008	mg/kg-day	2.0E+000	mg/kg-day	8.5E-008
	2,3,7,8-TCDD equiv.	0.308	ug/kg	0.308	ug/kg	M I	5.2E-012	mg/kg-day	1.5E+005	mg/kg-day	7.9E-007
	Antimony	32	mg/kg	32	mg/kg	M	5.4E-007	mg/kg-day	-	mg/kg-day	
	Arsenic	3640	mg/kg	3640	mg/kg *	M	6.2E-005	mg/kg-day	1.5E+000	mg/kg-day	4.1E-005
	(Tota	n[1	(ļ	1			1		4.7E-005
ermel	Benzo(s)entivacene	21000	ug/kg	21000	Lig/kg	M	6.0E-007	mg/kg-day	7.3E-001	mg/kg-day	4.4E-007
	Benzo(b)fluoranthene	30000	ug/kg	30000	uig/kg	M	8.6E-007	mg/kg-day	7.3E-001	mg/kg-day mg/kg-day	6.3E-007
	Benzo(d)pyrene	20000	ug/kg	20000	ug/kg	M (5.7E-007	mg/kg-day	7.3E+000	mg/kg-day	4.2E-008
	Indeno(1,2,3-cd)pyrene	12000	ug/kg	12000	ug/kg	M	3.4E-007	mg/kg-dey	7.3E-001	mg/kg-day	2.5E-007
	Dibenzo(a h)anthracene	2300	ug/kg	2300	ulg/kg	M	6.6E-008	mg/kg-day	7.3E+000	mg/kg-dey	4.8E-007
	Aldrin	400	ug/kg	400	ug/kg	M	8.8E-009	mg/kg-day	1:7E+001	mg/kg-day	1.5E-007
	Dieldfin	740	ug/kg	740	ug/kg	м	1.6E-008	mg/kg-day	1.6E+001	mg/kg-day	2.6E-007
	Methoxychlor	980000	ug/kg	980000	ug/kg	M	2.2E-005	mg/kg-day	-	mg/kg-day	-
	Arador-1248	34000	ug/kg	34000	ug/kg	M	1.0E-006	mg/kg-day	2.0E+000		2.1E-006
	Arodor-1260	2500	ug/kg	2500	ug/kg	м	7.7E-008	mg/kg-day	2.0E+000	mg/kg-day	1.5E-007
	2,3,7,8-TCDD equiv.	0.308	ug/kg	0.308	ug/kg	, м	2.0E-012	mg/kg-day	1.5E+005		3.0E-007
	Antimorty	32	mg/kg	32	mg/kg	м	7.0E-008	mg/kg-day			
	Arsenic	3640	mg/kg	3640	mg/kg	. м	2.4E-008	mg/kg-day	1.5E+000		1.8E-008
	(Tota	ol .			**						9.0E-008

⁽¹⁾ Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

N/A - Not Applicable.

⁻⁻ Cancer Slope Factor not available, therefore Cancer Risk not calculated.

TABLE 8.78.RME CALCULATION OF CANCER RISKS REASONABLE MAXIMUM EXPOSURE HORSESHOE ROAD COMPLEX SITE, SAYREVILLE, NEW JERSEY

Scenerio Timeframe: Future

Medium: Soil

Exposure Medium: Surface Soil

Exposure Point: AOC 3 - SPD

Receptor Population: Construction Workers

Exposure	Chemical	Medium	Medium	Route	Route	EPC	irtake	Irtake	Cencer Stope	Cencer Stoper	Cancer
Route	of Potential	EPC	EPC	EPC	EPC	Selected	(Cancer)	(Caricer)	Factor	Dose Units	Risk
	Concern	Value	Urits	Value	Units	for Hezerd Celculation (1)		Units			
gestion	Benzo(a)antinacene	1701	ug/kg	1701	ug/kg	- W -	2.9E-008	mg/kg-day	7.3E-001	mg/kg-day	2.1E-008
	Benzo(b)fluoranthene	2883	ug/kg	2883	ug/kg	M	4.9E-008	mg/kg-day	7.3E-001	mg/kg-day	3.6E-008
	Benzo(a)pyrene	1468	ug/kg	1468	ug/kg	M	2.5E-008	mg/kg-day	7.3E+000	mg/kg-day	1.8E-007
	Indeno(1,2,3-cd)pyrene	1302	ug/kg	1302	ug/kg	м	2.2E-008	mg/kg-day	7.3E-001	mg/kg-day	1.6E-008
	Methoxychior	650000	ug/kg	650000	ug/kg	M	1.1E-005	mg/kg-day	-	mg/kg-day	_
	Aluminum	8432	mg/kg	8432	mg/kg	M	1.4E-004	mg/kg-day		mg/kg-day	
	Antimony	17	mg/kg	17	mg/kg	М	2.9€-007	mg/kg-day	~	mg/kg-day	_
	Arsenic	24	mg/kg	24	mg/kg	M	4.1£-007	mg/kg-day	1.5E+000	mg/kg-day mg/kg-day mg/kg-day mg/kg-day	6.1E-007
	Copper	1519	mg/kg	1519	mg/kg	M	2.6€-005	mg/kg-day	ļ		-
	Manganese	215	mg/kg	215	mg/kg	M	3.7€-008	mb/kg-day	i -		-
	Theficin	0.92	mg/kg	0.92	mg/kg	M	1.6E-008	mb/kg-day	-	mg/kg-day	-
	Vanedium	37	mg/kg	37	mg/kg	M	6.3E-007	mg/kg-day	-	mg/kg-day mg/kg-day	
	1 .	(Total)						·			8.7E-00
ermei	Benzo(e)antirecene	1701	ug/kg	1701	ug/kg	M	4.9E-008	mg/kg-day	7.3E-001	mg/kg-day	3.6E-006
	Benzo(b)fluoranthene	2883	∪g/kg	2883	ug/kg	M	8.2E-008	mg/kg-day	7.3E-001	mg/kg-day	6.0E-008
	Benzo(a)pyrene	1468	ug/kg	1468	ug/kg	M	4.2E-008	mg/kg-day	7.3E+000	mg/kg-day	3.1E-007
	Indeno(1,2,3-cd)pyrane	1302	ug/kg	1302	ug/kg	м	3.7E-008	mg/kg-day	7.3E-001	mg/kg-day	2.7E-00
	Methoxychlor	850000	ug/kg	650000	ug/kg	M	1.4E-005	mg/kg-day	-	mg/kg-day	-
	Aluminum	8432	mg/kg	8432	mg/kg	M	1.95-005	mg/kg-day	-	mg/kg-day	-
	Antimony	17	mg/kg	17	mg/kg	M	3.7E-008	mg/kg-day	_	mg/kg-day	-
	Arsenic	24	mg/kg	24	mg/kg	M	1.6E-007	mg/kg-day	1.5E+000	mg/kg-day	2.4E-00
	Copper	1519	mg/kg	1519	mg/kg	M	3.3E-006	mg/kg-day	-	mg/kg-day .	-
	Mangenese	215	mg/kg	215	mg/kg	М	4.7E-007	mg/kg-day	-	mg/kg-day	-
	Thellium	0.92	mg/kg	0.92	mg/kg	M	2.0E-009	mg/kg-day	-	mg/kg-day	-
	Vanedium	37	mg/kg	37	mg/kg	M	8.1E-008	mg/kg-day		mg/kg-day	
	1 . ((Total)	1		ĺ	1					6.7E-00

⁽¹⁾ Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

⁻⁻⁻ Cancer Stope Factor not available, therefore Cancer Risk not calculated. N/A - Not Applicable.

TABLE 8.7a.RME CALCULATION OF CANCER RISKS REASONABLE MAXIMUM EXPOSURE HORSESHOE ROAD COMPLEX SITE, SAYREVILLE, NEW JERSEY

Scenario Timeframe: Future Medium: Solf Exposure Medium: Surface Soil Exposure Point: AOC 4 - ARC Receptor Population: Construction Workers Receptor Age: Adult

Exposure Route	Chemical of Potential	Medium EPC	Medium	Route	Route	EPC	fitake	Irtake	Cancer Slope	Cancer Stope	Cancer
Koda	Concern	Value	EPC Units	EPC Value	EPC Units	Selected for Hazard Calculation (1)	(Cancer)	(Cancer) Units	Factor	Dose Units	Risk
gestion	Benzo(b)fluoranthene	2600	ug/kg	2600	ug/kg	W	4.4E-008	mg/kg-day	7.3E-001	mg/kg-day	3.2E-008
	Benzo(a)pyrene	1800	ug/kg	1800	ug/kg	M '	3.1E-008	mg/kg-day	7.3E+000	mg/kg-day	2.2E-007
	Hexachiorobutadiene	6800	ug/kg	6800	ug/kg	M	1.2E-007	mg/kg-day	7.8E-002	mg/kg-day	9.0E-00
	Hexachtorocyclopentactione	57440	ug/kg	57440	ug/kg	M.	9.8E-007	mg/kg-day	_	mg/kg-day	-
	Addin	22	ug/kg	22	ug/kg	M	3.7E-010	mg/kg-day	1.7E+001	mg/kg-day	6.4E-009
	Arodor-1248	891	ug/kg	891	ug/kg	M -	1.5E-008	mg/kg-day	2.0E+000	mg/kg-day	3.0E-006
	Arodor-1254	1941	ug/kg	1941	ug/kg	M)	3.3E-008	mg/kg-day	2.0E+000	mg/kg-day	6.6E-00
	Aroclar-1260	465	ug/kg	465	ug/kg	M .	7.9E-009	mg/kg-day	2.0E+000	mg/kg-day	1.6E-008
	2,3,7,8-TCDD equiv.	0.2	ug/kg	0.2	ug/kg	M	3.4E-012	mg/kg-day	1.5E+005	mg/kg-day	5.1E-007
	Aluminum	15500	mg/kg	15500	mg/kg	M I	2.6E-004	mg/kg-day	_ `	mg/kg-day	-
	Antimony	18	mg/kg	18	mg/kg	M	3.1E-007	mg/kg-day	-	maka-day	
	Arsenic	27	mg/kg	27	mg/kg	M	4.6E-007	mg/kg-day	1.5E+000	mg/kg-dey	6.9E-007
	Cadmium	37	mg/kg	37	mg/kg	M	6.3E-007	mg/kg-day	_	mg/kg-day	-
	Copper	591	mg/kg	591	mg/kg	N N	1.0E-005	mg/kg-day	_	mg/kg-day	
	Manganese	461	mg/kg	461	mg/kg	M	7.8E-006	mg/kg-day	_	mg/kg-day	l _
	Nickel	296	mg/kg	296	mg/kg	M	5.0E-006	mg/kg-day		mg/kg-day	_
	Silver	287	mg/kg	287	mg/kg	M	4.9E-006	mg/kg-day	_	mg/kg-day	1 _
	Thelium	0.72	mg/kg	0.72	maka	M 1	1.2E-008	mg/kg-day	_	mg/kg-day	-
	Zinc	9172	mg/kg	9172	mg/kg	M .	1.6E-004	mg/kg-day	_	mg/kg-day	l
	(To	(al)									1.6E-000
amal	Benzo(b)fluorenthene	2600	ug/kg	2600	ug/kg	M 1	7.4E-008	mg/kg-day	7 3E-001	mg/kg-dey	5.4É-00
	Benzo(a)pyrene	1800	ug/kg	1800	ug/kg	M .	5.1E-008	mg/kg-day	7.3E+000	mg/kg-day	3.8E-007
	Hexachlorobuladiene	6800	ug/kg	6800	ug/kg	M	1.5E-007	mg/kg-day	7.8E-002	mg/kg-day	1.2E-008
	Hexachtorocyclopertactione	57440	ug/kg	57440	ug/kg	M	1.3E-006	mg/kg-day	-	mg/kg-day	_
	Aldrin	22	∪ g/ kg	22	ug∧kg	M I	4.8E-010	mg/kg-day	1.7E+001	mg/kg-day	8.2E-000
	Aroclar-1248	891	ug/kg	891	ug/kg	M	2.7E-008	mg/kg-day	2.0E+000	mg/kg-day	5.5E-008
	Arodor-1254	1941	ug/kg	1941	ug/kg	M	6.0E-008	mg/kg-day	2.0E+000	mg/kg-day	1.2E-00
	Arodor-1260	465	ug/kg	465	ug/kg	M -	1.4E-008	mg/kg-day	2.0E+000	mg/kg-day	2.9€-008
	2,3,7.8-TCDD equiv.	0.2	ug/kg	0.2	ugkg	M	1.3E-012	mg/kg-day	1.5E+005	mg/kg-day	2.0E-00
	Akıminum	15500	mg/kg	15500	mg/kg	M	3.4E-005	mg/kg-day	-	mg/kg-day	i
	Antimony	18	mg/kg	18	mg/kg	i M	4.0E-008	mg/kg-day	-	mg/kg-day	
	Arsenic	27	mg/kg	27	mg/kg	M	1.8E-007	mg/kg-day	1.5E+000	mg/kg-day	2.7E-00
	Cadmium	37	mg/kg	37	mg/kg	M 1	8.1E-009	mg/kg-day		mg/kg-day	<u> </u>
	Copper	591	mg/kg	591	mg/kg	M	1.3E-006	mg/kg-day	-	mg/kg-day	-
	Manganese	461	mg/kg	461	mg/kg	М	1.0E-006	mg/kg-day	-	mg/kg-day	-
	Nickel	296	mg/kg	296	mg/kg	М	6.5E-007	mg/kg-day		mg/kg-day	
	Silver	287	mg/kg	287	mg/kg	M 1	6.3E-007	mg/kg-day	-	mg/kg-day	
	Thelitum	0.72	mg/kg	0.72	mg/kg	м	1.6E-009	mg/kg-day	-	mg/kg-day	
	Zinc	9172	mg/kg	9172	mg/kg	M	2.0E-005	mg/kg-day	-	mg/kg-day	
	(To	(ai)			1	1		1	Į	1	1.1E-00

⁽¹⁾ Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

⁻⁻ Cancer Slope Factor not available, therefore Cancer Risk not calculated. N/A - Not Applicable.

TABLE 8.7b.RME CALCULATION OF CANCER RISKS REASONABLE MAXIMUM EXPOSURE HORSESHOE ROAD COMPLEX SITE, SAYREVILLE, NEW JERSEY

Scenario Timeframe: Future

Medium: Soit

Exposure Medium: Subsurface Soil

Exposure Point: AOC 1 - HRDD

Receptor Population: Construction Workers

Exposure	Chemical	Médium	Medium	Route	Route	EPC	Intake	Intake	Cancer Slope	Cancer Slope	Cancer
Route	of Potential	EPC	EPC	EPC	EPC	Selected	(Cancer)	(Cancer)	Factor	Factor Units	Risks
	Concern	Value	Units	Value	Units	for Hazard	` ,	Units	}		
						Calculation (1)					
gestion			<u> </u>								
	Aroclor-1248	1300	ug/kg	1300	ug/kg	M I	2.2E-008	mg/kg-day	2.0E+000	mg/kg-day	4.4E-008
	Aroclor-1254	96	ug/kg	96	ug/kg	м .	1 6E-009	mg/kg-day	2.0E+000	mg/kg-day	3.3E-009
	Aroclor-1260	3100	ug/kg	3100	ug/kg	M	5.3E-008	mg/kg-day	2.0E+000	mg/kg-day	1.1E-007
	Aluminum	10685	mg/kg	10685	mg/kg	M	1.8E-004	mg/kg-day		mg/kg-day	-
	Antimony	5.1	mg/kg	5.1	mg/kg	M	8.7E-008	mg/kg-day		mg/kg-day	
	Arsenic	24.5	mg/kg	24.5	mg/kg	M	4.2E-007	mg/kg-day	1.5E+000	mg/kg-day	6.2E-007
	Cadmium	4.4	mg/kg	4.4	mg/kg	M	7.5E-008	mg/kg-day		mg/kg-day	
	Copper	1222	mg/kg	1222	mg/kg	M	2.1E-005	mg/kg-day		mg/kg-day	-
	Manganese	486	mg/kg	486	mg/kg	M	8.3E-006	mg/kg-day		mg/kg-day	-
	Nickel	174	mg/kg	174	mg/kg	M	3.0E-006	mg/kg-day	-	mg/kg-day	
	Thallium	2.5	mg/kg	2.5	mg/kg	M	4.3E-008	mg/kg-day	-	mg/kg-day	_
	Vanadium	50	mg/kg	50	mg/kg	M	8.5E-007	mg/kg-day	-	mg/kg-day	
	(Total)		1		1						7.8E-007
ermal											
	Aroctor-1248	1300	ug/kg	1300	ug/kg	M	4.0E-008	mg/kg-day	2.0E+000	mg/kg-day	8.0E-008
	Aroclor-1254	96	ug/kg	96	ug/kg	м	3.0E-009	mg/kg-day	2.0E+000	mg/kg-day	5.9E-009
	Aroclor-1260	3100	ug/kg	3100	ug/kg	M	9.5E-008	mg/kg-day	2.0E+000	mg/kg-day	1.9E-007
	Aluminum	10685	mg/kg	10685	mg/kg	M	2.4E-005	mg/kg-day		mg/kg-day	-
	Antimony	5.1	mg/kg	5.1	mg/kg	M	1.1E-008	mg/kg-day	-	mg/kg-day	
	Arsenic	24.5	mg/kg	24.5	mg/kg	M	1.6E-007	mg/kg-day	1.5E+000	mg/kg-day	2.4E-00
	Cadmium	. 4.4	mg/kg	4.4	mg/kg	M (9.7E-010	mg/kg-day	-	mg/kg-day	
	Copper	1222	mg/kg	1222	mg/kg	M	2.7E-006	mg/kg-day	-	mg/kg-day	-
	Manganese	486	mg/kg	486	mg/kg	M	1.1E-008	mg/kg-day	-	mg/kg-day	-
	Nickel	174	mg/kg	174	mg/kg	M [3.8E-007	mg/kg-day		mg/kg-day	-
	Thallium	2.5	mg/kg	2.5	mg/kg	M	5.5E-009	mg/kg-day	_	mg/kg-day]
	Vanadium	50	mg/kg	50	mg/kg	M	1.1E-007	mg/kg-day	-	mg/kg-day	
	(Total)		1		I	1 1			1		5.2E-007

⁽¹⁾ Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

^{-- -} Cancer Slope Factor not available, therefore Cancer Risk not calculated. N/A - Not Applicable.

TABLE 8.7b.RME CALCULATION OF CANCER RISKS REASONABLE MAXIMUM EXPOSURE HORSESHOE ROAD COMPLEX SITE, SAYREVILLE, NEW JERSEY

Scenario Timeframe: Future

Medium: Soil

Exposure Medium: Test Pit Soil Exposure Point: AOC 1 - HRDD

Receptor Population: Construction Workers

Exposure	Chemical	Medium	Medium	Route	Route	EPC	Intake	Intake	Cancer Slope	Cancer Slope	Cancer
Route	of Potential	EPC	EPC	EPC	EPC	Selected	(Cancer)	(Cancer)	Factor	Factor Units	Risks
	Concern	Value	Units	Value	Units	for Hazard		Units			
			1			Calculation (1)		·			
gestion	Benzo(s)pyrene	1348	ug/kg	1346	ug/kg	M	2.3E-008	mg/kg-day	7.3E+000	mg/kg-day	1.7E-007
	Aroclor-1248	41000	ug/kg	41000	ug/kg	M	7.0E-007	mg/kg-day	2.0E+000	mg/kg-day	1.4E-006
	Aroclor-1254	6200	ug/kg	6200	ug/kg	M	1.1E-007	mg/kg-day	2.0E+000	mg/kg-day	2.1E-007
	Antimony	1308	mg/kg	1308	mg/kg	M	2.2E-005	mg/kg-day	-		·
	Arsenic	707	mg/kg	707	mg/kg	M	1.2E-005	mg/kg-day	1.5E+000	mg/kg-day	1.8E-005
	(Total)					1		ļ		mg/kg-day mg/kg-day mg/kg-day	2.0E-005
ermal	Benzo(a)pyrene	1346	ug/kg	1346	ug/kg	M	3.8E-008	mg/kg-day	7.3E+000	mg/kg-day	2.8E-007
	Aroclor-1248	41000	ug/kg	41000	ug/kg	M	1.3E-006	mg/kg-day	2.0E+000	mg/kg-day	2.5E-006
	Aroclor-1254	6200	ug/kg	6200	ug/kg	M	1.9E-007	mg/kg-day	2.0E+000	mg/kg-day	3.8E-007
	Antimony	1308	mg/kg	1308	mg/kg	М)	2.9E-006	mg/kg-day	-	mg/kg-day	-,
	Arsenic	707	mg/kg	707	mg/kg	M	4.7E-006	mg/kg-day	1.5E+000	mg/kg-day	7.0E-008
	(Total)				1	1			1)	1.0E-005

⁽¹⁾ Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

Cancer Slope Factor not available, therefore Cancer Risk not calculated.
 N/A - Not Applicable.

TABLE 8.7b RME CALCULATION OF CANCER RISKS REASONABLE MAXIMUM EXPOSURE HORSESHOE ROAD COMPLEX SITE, SAYREVILLE, NEW JERSEY

Scenario Timeframe: Future

Medium: Soft

Exposure Medium: Subsurface Soil

Exposure Point: AOC 2 - ADC

Receptor Population: Construction Workers

Exposure	Chemical	Medium	Medium	Route	Route	EPC	Intake	Intake	Cancer Slope	Cancer Slope	Cancer
Route	of Potential	EPC	EPC	EPC	EPC	Selected	(Cancer)	(Cancer)	Factor	Factor Units	Risks
	Concern	Value	Units	Value	Units	for Hazard		Units			
						Calculation (1)					
gestion	1,2-Dichloroethane	390000	ug/kg	390000	ug/kg	M	6.6E-006	mg/kg-day	9.1E-002	mg/kg-day	6.0E-007
	Benzo(b)fluoranthene	3149	ug/kg	3149	ug/kg	M	5.4E-008	mg/kg-day	7.3E-001	mg/kg-day mg/kg-day mg/kg-day mg/kg-day mg/kg-day mg/kg-day mg/kg-day mg/kg-day mg/kg-day mg/kg-day mg/kg-day mg/kg-day mg/kg-day mg/kg-day mg/kg-day mg/kg-day mg/kg-day	3.9E-008
	Benzo(a)pyrene	4713	ug/kg	4713	ug/kg	M	8.0E-008	mg/kg-day	7.3E+000	mg/kg-day	5.8E-007
	Methoxychlor	760000	ug/kg	760000	ug/kg	М	1.3E-005	mg/kg-day		mg/kg-day	
	Aroclor-1242	10538	ug/kg	10538	ug/kg	. м	1.8E-007	mg/kg-day	2.0E+000	mg/kg-day	3.6E-007
	Aroclor-1248	74000	ug/kg	74000	ug/kg	M	1.3E-006	mg/kg-day	2.0E+000	mg/kg-day mg/kg-day mg/kg-day mg/kg-day mg/kg-day mg/kg-day mg/kg-day mg/kg-day mg/kg-day mg/kg-day mg/kg-day mg/kg-day mg/kg-day mg/kg-day mg/kg-day mg/kg-day	2.5E-008
	Arsenic	828	mg/kg	828	mg/kg	м 1	1.4E-005	mg/kg-day	1.5E+000		2.1E-005
	Thattium	1.8	mg/kg	1.8	mg/kg	м	3.1E-008	mg/kg-day			
	(Tol	tai)									2.5E-005
ermal	1,2-Dichloroethane	390000	ug/kg	390000	ug/kg	M	8.6E-005	mg/kg-day	9.1E-002	mg/kg-day mg/kg-day mg/kg-day mg/kg-day mg/kg-day mg/kg-day mg/kg-day mg/kg-day mg/kg-day mg/kg-day mg/kg-day mg/kg-day mg/kg-day mg/kg-day	7.8E-008
	Benzo(b)fluoranthene	3149	ug/kg	3149	ug/kg	M	9.0E-008	mg/kg-day	7.3E-001	mg/kg-day	6.6E-008
	Benzo(a)pyrene	4713	ug/kg	4713	ug/kg	М	1.3E-007	mg/kg-day	7.3E+000	mg/kg-day	9.8E-007
	Methoxychlor	760000	ug/kg	760000	ug/kg	M	1.7E-005	mg/kg-day	_	mg/kg-day	
	Aroctor-1242	10538	ug/kg	10538	ug/kg	M	3.2E-007	mg/kg-day	2.0E+000	mg/kg-day	6.5E-007
	Aroclor-1248	74000	ug/kg	74000	ug/kg	М	2.3E-008	mg/kg-day	2 0E+000	mg/kg-day	4.6E-006
	Arsenic	828	mg/kg	828	mg/kg	M	5.5E-006	mg/kg-day	1.5E+000	mg/kg-day	8.2E-006
	Thallium	1.8	mg/kg	1.8	mg/kg	M	4.0E-009	mg/kg-day	_	mg/kg-day	-
	(Tot	(al)	1	1	1	1					2.2E-005

⁽¹⁾ Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

⁻ - Cancer Slope Factor not available, therefore Cancer Risk not calculated. $\mbox{N/A}$ - Not Applicable.

TABLE 8.7b.RME CALCULATION OF CANCER RISKS REASONABLE MAXIMUM EXPOSURE HORSESHOE ROAD COMPLEX SITE, SAYREVILLE, NEW JERSEY

Scenario Timeframe: Future

Medium: Soil

Exposure Medium: Subsurface Soil

Exposure Point: AOC 3 - SPD

Receptor Population: Construction Workers

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risks
gestion					2777 2782 1 111 1111	1	NET LOS MAINTAINTENANTS AT THE ST	went from the series	er t repris ere e van ee,		**************************************
	Benzo(a)pyrene	93	ug/kg	93	ug/kg	M	1.6E-009	mg/kg-day	7.3E+000	mg/kg-day	1.2E-008
	Aroclor-1254	164	ug/kg	164	ug/kg	M	2.8E-009	mg/kg-day	2.0E+000	mg/kg-day	5.6E-009
	Aroclor-1260	178	ug/kg	176	ug/kg	М	3.0E-009	mg/kg-day	2.0E+000	mg/kg-day	6.0E-009
	Methoxychlor	18000	ug/kg	18000	ug/kg	М	3.1E-007	mg/kg-day	-	mg/kg-day	_ `
	Aluminum	9082	mg/kg	9082	mg/kg	M	1.5E-004	mg/kg-day		mg/kg-day	-
	Antimony	0.83	mg/kg	0.83	mg/kg	. M	1.4E-008	mg/kg-day	-	mg/kg-day	-
	Arsenic	29	mg/kg	29	mg/kg	M	4.9E-007	mg/kg-day	1.5E+000	mg/kg-day	7.4E-007
	Cadmium	0.67	mg/kg	0.67	mg/kg	M	1.1E-008	mg/kg-day	_	mg/kg-day	-
	Manganese	197	mg/kg	197	mg/kg	M	3.3E-006	mg/kg-day	_	mg/kg-day	-
	Thallium	1.2	mg/kg	1.2	mg/kg	M	2.0E-008	mg/kg-day	-	mg/kg-day	-
	Vanadium	33	mg/kg	33	mg/kg	M .	5.6E-007	mg/kg-day	_	mg/kg-day	_
	(Total)										7.6E-007
rmal								·			
	Benzo(a)pyrene	93	ug/kg	93	ug/kg	M	2.7E-009	mg/kg-day	7.3E+000	mg/kg-day	1.9E-008
	Aroclor-1254	164	ug/kg	164	ug/kg	M	5.1E-009	mg/kg-day	2.0E+000	mg/kg-day	1.0E-008
	Aroclor-1260	176	ug/kg	176	ug/kg	M	5.4E-009	mg/kg-day	2.0E+000	mg/kg-day	1.1E-008
	Methoxychlor	18000	ug/kg	18000	ug/kg	M	4.0E-007	mg/kg-day	-	mg/kg-day	
	Aluminum	9082	mg/kg	9082	mg/kg	M	2.0E-005	mg/kg-day	<u> </u>	mg/kg-day	-
	Antimony	0.83	mg/kg	0.83	mg/kg	M	1.8E-009	mg/kg-day	-	mg/kg-day	-
	Arsenic	29	mg/kg	29	mg/kg	, M	1.9E-007	mg/kg-day	1.5E+000	mg/kg-day	2.9E-007
	Cadmium	0.67	mg/kg	0.67	mg/kg	M	1.5E-010	mg/kg-day	-	mg/kg-day	_
	Manganese	197	mg/kg	197	mg/kg	. M	4.3E-007	mg/kg-day	-	mg/kg-day	-
	Thallium	1.2	mg/kg	1.2	mg/kg	M	2.6E-009	mg/kg-day		mg/kg-day	_
	Vanadium	33	mg/kg	33	mg/kg	м	7.3E-008	mg/kg-day	-	mg/kg-day	
	(Total)		1			1		1]	3.3E-007

⁽¹⁾ Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

⁻⁻⁻ Cancer Slope Factor not available, therefore Cancer Risk not calculated. N/A - Not Applicable.

TABLE 8.7b.RME CALCULATION OF CANCER RISKS REASONABLE MAXIMUM EXPOSURE HORSESHOE ROAD COMPLEX SITE, SAYREVILLE, NEW JERSEY

Scenario Timeframe: Future

Médium: Sóil

Exposure Medium: Test Pit Soil

Exposure Point: AOC 3 - SPD

Receptor Population: Construction Workers

Exposure Route	Chemical of Potential	Medium EPC	Medium EPC	Route EPC	Route EPC	EPC Selected	Intake (Cancer)	Intake (Cancer)	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risks
Houte	Concern	Value	Units	Value	Units	for Hazard	(Cancer)	Units	racio	racioi units	Raka
	Concent	Value	Office	Value	Units	Calculation (1)		Offics			
ngestion											
	Hexachloroethane	10,201,148	ug/kg	10,201,148	ug/kg	M	1.7E-004	mg/kg-day	1.4E-002	mg/kg-day	2.4E-006
	Benzo(a)pyrene	4700	ug/kg	4700	ug/kg	M	8.0E-008	mg/kg-day	7.3E+000	mg/kg-day	5.8E-007
	Dibenzo(a,h)anthracene	920	ug/kg	920	ug/kg	. M	1.6E-008	mg/kg-day	7.3E+000	mg/kg-day	1.1E-007
	Aroctor-1248	21000	ug/kg	21000	ug/kg	M	3.6E-007	mg/kg-day	2.0E+000	mg/kg-day	7.1E-007
	Aroclor-1254	6000	ug/kg	6000	ug/kg	M	1.0E-007	mg/kg-day	2.0E+000	mg/kg-day	2.0E-007
	Arsenic	77	mg/kg	77	mg/kg	М	1.3E-008	mg/kg-day	1.5E+000	mg/kg-day	2.0E-006
	Copper	32300	mg/kg	32300	mg/kg	M	5.5E-004	mg/kg-day	-	mg/kg-day	-
	(Tota)]			6.0E-006
ermal											
	Hexachloroethane	10,201,148	ug/kg	10,201,148	ug/kg	M	2.2E-004	mg/kg-day	1.4E-002	mg/kg-day	3.1E-006
	Benzo(a)pyrene	4700	ug/kg	4700	ug/kg	M	1.3E-007	mg/kg-day	7.3E+000	mg/kg-day	9.8E-007
	Dibenzo(a,h)anthracene	920	ug/kg	920	ug/kg	М	2.6E-008	mg/kg-day	7 3E+000	mg/kg-day	1.9E-007
	Aroclor-1248	21000	ug/kg	21000	ug/kg	M	6.5E-007	mg/kg-day	2.0E+000	mg/kg-day	1.3E-008
	Aroclor-1254	6000	ug/kg	6000	ug/kg	M	1.8E-007	mg/kg-day	2.0E+000	mg/kg-day	3.7E-007
	Arsenic	- 77	mg/kg	77	mg/kg	M	5.1E-007	mg/kg-day	1.5E+000	mg/kg-day	7.6E-007
	Copper	32300	mg/kg	32300	mg/kg	M	7.1E-005	mg/kg-day	-	mg/kg-day	
	(Tota)	1	1						1	6.7E-008

⁽¹⁾ Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

^{-- -} Cancer Slope Factor not available, therefore Cancer Risk not calculated. N/A - Not Applicable.

TABLE 8.7b.RME CALCULATION OF CANCER RISKS REASONABLE MAXIMUM EXPOBURE HORSESHOE ROAD COMPLEX SITE, SAYREVILLE, NEW JERSEY

Scenario Timeframe: Future

Medium: Soil

Exposure Medium: Subsurface Soil

Exposure Point: AOC 4 - ARC

Receptor Population: Construction Workers

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risks
gestion	Tetrachloroethene	19252	ug/kg	19252	ug/kg	M	3.3E-007	mg/kg-day	5.2E-002	mg/kg-day	1.7E-008
	Chlorobenzene	29736	ug/kg	29736	ug/kg	M	5.1E-007	mg/kg-day		mg/kg-day	
	Benzo(a)anthracene	793	ug/kg	793	ug/kg	M	1.3E-008	mg/kg-day	7.3E-001	mg/kg-day	9.8E-00
	Benzb(b)fluoranthene	830	uģ/kg	830	ug/kg	M	1.4E-008	mg/kg-day	7.3E-001	mg/kg-day	1.0E-00
	Benzo(a)pyrene	767	u g /kg	767	ug/kg	M	1.3E-008	mg/kg-day	7.3E+000	mg/kg-day	9.5E-00
	Indeno(1,2,3-cd)pyrene	693	u g/k g	693	ug/kg	M	1.2E-008	mg/kg-day	7.3E-001	mg/kg-day	8.6E-00
	1,2,4-Trichlorobenzene	112687	u g /kg	112687	ug/kg	M	1.96-006	mg/kg-day	_	mg/kg-day	
	Aldrin	5.7	ug/kg	5.7	ug/kg	M	9.7E-011	mg/kg-day	1.7E+001	mg/kg-day	1.6E-00
	Aroclor-1248	149	ug/kg	149	ug/kg	M	2.5E-009	mg/kg-day	2.0E+000	mg/kg-day	5.1E-00
	Aroctor-1254	56	ug/kg	56	ug/kg	M .	9.5E-010	mg/kg-day	2.0E+000	mg/kg-day	1.9E-00
	Aluminum	13018	mg/kg	13018	mg/kg	M	2.2E-004	mg/kg-day		mg/kg-day	
	Antimony	2.1	mg/kg	2.1	mg/kg	M	3.6E-008	mg/kg-day		mg/kg-day	-
	Arsenic	13	mg/kg	13	mg/kg	M	2.2E-007	mg/kg-day	1.5E+000	mg/kg-day	3.3E-00
	Manganese	133	mg/kg	133	mg/kg	M	2.3E-008	mg/kg-day	_	mg/kg-day	
	Thallium	1.1	mg/kg	1:1	mg/kg	M	1.9E-008	mg/kg-day	_	mg/kg-day	
	Vanadium (T	43 otat)	mg/kg	43	mg/kg	M	7.3E-007	mg/kg-day		mg/kg-day	4.8E-00
ermal	Tetrachloroethene	19252	ug/kg	19252	ug/kg	M	4.2E-006	mg/kg-day	5.2E-002	mg/kg-day	2.2E-00
	Chlorobenzene	29736	ug/kg	29738	ug/kg	M	6.5E-006	mg/kg-day	_	mg/kg-day	
	Benzo(a)anthracene	793	ug/kg	793	ug/kg	M	2.3E-008	mg/kg-day	7.30E-001	mg/kg-day	1.7E-00
	Benzo(b)fluoranthene	830	ug/kg	830	ug/kg	M	2.4E-008	mg/kg-day	7.3E-001	mg/kg-day	1.7E-00
	Benzo(a)pyrene	767	ug/kg	767	ug/kg	M	2.2E-008	mg/kg-day	7.3E+000	mg/kg-day	1.6E-00
	Indeno(1,2,3-cd)pyrene	693	ug/kg	693	ug/kg	M	2.0E-008	mg/kg-day	7.3E-001	mg/kg-day	1.4E-00
	1,2,4-Trichlorobenzene	112687	ug/kg	112687	ug/kg	M (2.5E-006	mg/kg-day	_	mg/kg-day	
	Aldrin	5.7	ug/kg	5.7	ug/kg	M	1.3E-010	mg/kg-day	1.7E+001	mg/kg-day	2.1E-00
	Aroclor-1248	149	ug/kg	149	ug/kg	M	4.6E-009	mg/kg-day	2.0E+000	mg/kg-day	9.2E-00
	Aroclor-1254	56	ug/kg	56	ug/kg	M	1.7E-009	mg/kg-day	2.0E+000	mg/kg-day	3.4E-00
	Aluminum	13018	mg/kg	13018	mg/kg) M	2.9E-005	mg/kg-day	_	mg/kg-day	_
	Antimony	2.1	mg/kg	2.1	mg/kg	M	4.6E-009	mg/kg-day		mg/kg-day	
	Arsenic	13	mg/kg	13	mg/kg	M	8.6E-008	mg/kg-day	1.5E+000	mg/kg-day	1.3E-00
	Manganese	133	mg/kg	133	mg/kg	M	2.9E-007	mg/kg-day		mg/kg-day	
	Thallium	1.1	mg/kg	1.1	mg/kg	M	2.4E-009	mg/kg-day		mg/kg-day	
*	Vanadium	43	mg/kg	43	mg/kg	M	9.5E-008	mg/kg-day		mg/kg-day	
		otal)				!!			[5.7E-00

⁽¹⁾ Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

⁻⁻⁻ Cancer Slope Factor not available, therefore Cancer Risk not calculated.

N/A - Not Applicable.

TABLE 8.8 RME CALCULATION OF CANCER RISKS REASONABLE MAXIMUM EXPOSURE HORSESHOE ROAD COMPLEX SITE, SAYREVILLE, NEW JERSEY

Scenario Timeframe: Future
Medium: Bulding Materials
Exposure Medium: Bulding Materials
Exposure Point: AOC 2 - ADC
Receptor Population: Site Workers

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intaké (Cancer)	Intake (Cancer) Units	Cander Slope Factor	Cahcer Slope Dose Units	Cancer Risk
ngestion	Benzo(a)anthracene	1100000	ug/kg	1100000	ug/kg	M	2.0E-004	mg/kg-day	7.3E-001	mg/kg-day	1.4E-004
	Benzo(b)fluoranthene	1400000	ug/kg	1400000	ug/kg	· M	2.5E-004	mg/kg-day	7.3E-001	mg/kg-day	1.8E-004
	Benzo(a)pyrene	1190000	ug/kg	1100000	ug/kg	M	2.0E-004	mg/kg-day	7.3E+000	mg/kg-day	1.4E-003
	Indeno(1,2,3-cd)pyrene	300000	ug/kg	300000	ug/kg	M	5.4E-005	mg/kg-day	7.3E-001	mg/kg-day	3.9E-005
	Dibenzo(a,h)anthracene	90000	ug/kg	90000	ug/kg	M	1.6E-005	mg/kg-day	7.3E+000	mg/kg-day	1.2E-004
	Naphthalene	320000	ug/kg	320000	ug/kg	М	5.8E-005	mg/kg-day		mg/kg-day	-
	2-Methylnaphthalene	1100000	ug/kg	1100000	ug/kg	M	2.0E-004	mg/kg-day		mg/kg-day	-
	Acenaphthene	800000	ug/kg	800000	ug/kg	M	1.4E-004	mg/kg-day	-	mg/kg-day	-
	Dibenzofuran	1000000	ug/kg	1000000	ug/kg	M	1.8E-004	mg/kg-day	-	mg/kg-day	-
	Fluorene	1600000	ug/kg	1600000	ug/kg	M	2.9E-004	mg/kg-day	-	mg/kg-day	-
	Fluoranthene	3900000	ug/kg	3900000	ug/kg	M	7.0E-004	mg/kg-day	-	mg/kg-day	-
	Pyrene	2800000	ug/kg	2800000	ug/kg	M	5.0E-004	mg/kg-day	-	mg/kg-day	
	Methoxychlor	150000	ug/kg	150000	ug/kg	M	2.7E-005	mg/kg-day	-	mg/kg-day	-
	Antimony	5.7	mg/kg	5.7	mg/kg	M	1.0E-006	mg/kg-day	-	mg/kg-day	-
	Arsenic	84	mg/kg	84	mg/kg	M	1.5E-005	mg/kg-day	1.5E+000	mg/kg-day	2.3E-005
	Copper	495	mg/kg	495	mg/kg	M	8.9E-005	mg/kg-day	· -	mg/kg-day	-
	Manganese	495	mg/kg	495	mg/kg	M	8.9E-005	mg/kg-day	-	mg/kg-day	-
	Thellium	1.8	mg/kg	1.8	mg/kg	M	3.2E-007	mg/kg-day	-	mg/kg-day	-
	Zinc (Tot	3050 el)	mg/kg	3050	mg/kg	М	5.5E-004	mg/kg-day	-	mg/kg-day	2.0E-003
Permai	Benzo(a)anthracene	1100000	ug/kg	1100000	ug/kg	M	2.9E-003	mg/kg-day	7.3E-001	mg/kg-day	2.1E-003
	Benzo(b)fluoranthene	1400000	ug/kg	1400000	ug/kg	M	3.6E-003	mg/kg-day	7.3E-001	mg/kg-day	2.7E-003
	Benzo(a)pyrene	1100000	ug/kg	1100000	ug/kg	M	2.9E-003	mg/kg-day	7:3E+000	mg/kg-day	2.1E-002
	Indeno(1,2,3-cd)pyrene	300000	ug/kg	300000	ug/kg	M	7.8E-004	mg/kg-day	7.3E-001	mg/kg-day	5.7E-004
	Dibenzo(a,h)anthracene	90000	ug/kg	90000	ug/kg	м	2.3E-004	mg/kg-day	7.3E+000	mg/kg-day	1.7E-003
	Naphthalene	320000	ug/kg	320000	ug/kg	M	8.3E-004	mg/kg-day	-	mg/kg-day	-
	2-Methylnaphthalene	1100000	ug/kg	1100000	ug/kg	м	2.9E-003	mg/kg-day	-	mg/kg-day	-
	Acenaphthene	800000	ug/kg	800000	ug/kg	М	2.1E-003	mg/kg-day	-	mg/kg-day	-
	Dibenzofuran	1000000	ug/kg	1000000	ug/kg	M ·	2.6E-003	mg/kg-day	-	mg/kg-day	-
	Fluorene	1600000	ug/kg	1600000	ug/kg	M	4.2E-003	mg/kg-day		rng/kg-day	-
	Fluoranthene	3900000	ug/kg	3900000	ug/kg	M	1.0E-002	mg/kg-day		mg/kg-day	-
	Pyrene	2800000	ug/kg	2800000	ug/kg	M	7.3E-003	mg/kg-day	_	mg/kg-day	
	Methoxychlor	150000	ug/kg	150000	ug/kg	. M	3.0E-004	mg/kg-day	-	mg/kg-day	-
	Antimony	5.7	mg/kg	5.7	mg/kg	M	1.1E-006	mg/kg-day	-	mg/kg-day	-
	Arsenic	84	mg/kg	84	mg/kg	М	5.0E-005	mg/kg-day	1.5E+000	mg/kg-day	7.6E-005
	Copper	495	mg/kg	495	mg/kg	м	9.9E-005	mg/kg-day	-	mg/kg-day	-
	Manganese	495	mg/kg	495	mg/kg	M	9.9E-005	mg/kg-day		mg/kg-day	_
	Thallum	1.8	mg/kg	1.8	mg/kg	M	3.6E-007	mg/kg-day]	mg/kg-day	_
	Zinc	3050	mg/kg	3050	mg/kg	M	6.1E-004	mg/kg-day	-	mg/kg-day	2.8E-002

⁽¹⁾ Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

TABLE 8.8.CT CALCULATION OF CANCER RISKS CENTRAL TENDENCY EXPOSURE HORSESHOE ROAD COMPLEX SITE, SAYREVILLE, NEW JERSEY

Scenario Timeframe: Future
Medium: Building Materials
Exposure Medium: Building Materials
Exposure Point: AOC 2 - ADC
Receptor Population: Site Workers
Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazerd Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Dose Units	Cancer Risk
gestion	Benzo(a)anthracene	468143	ug/kg	468143	ug/kg	M	1,1E-005	mg/kg-day	7.3E-001	mg/kg-day	7.9E-006
	Benzo(b)fluoranthene	540875	ug/kg	540875	ug/kg	M	1.2E-005	mg/kg-day	7.3E-001	mg/kg-day	9.1E-006
	Benzo(a)pyrene	426620	ug/kg	426620	ug/kg	М	9.8E-006	mg/kg-day	7.3E+000	mg/kg-day	7.2E-005
	Indeno(1,2,3-cd)pyrene	147910	ug/kg	147910	ug/kg	M	3.4E-006	mg/kg-day	7.3E-001	mg/kg-day	2.5E-006
	Dibenzo(a,h)enthracene	42438	ug/kg	42438	ugAkg	M	9.8E-007	mg/kg-day	7.3E+000	mg/kg-day	7.1E-006
	Naphthelene	100988	ug/kg	100988	ug/kg	M	2.3E-006	mg/kg-day	_	mg/kg-day	
	2-Methylnaphthalane	498113	ug/kg	498113	ug/kg	M	1.1E-005	mg/kg-day	-	mg/kg-day	-
	Acenephinene	355888	ug/kg	355888	ug/kg	M	8.2E-006	mg/kg-day	-	mg/kg-day	-
	Dibenzofuran	398113	ug/kg	398113	ug/kg	M	9.2E-006	mg/kg-day	-	mg/kg-day	_
	Fluorene	583363	ug/kg	583363	ug/kg	M	1.3E-005	mg/kg-day	-	ing/kg-day	-
	Fluoranthene	1833525	ug/kg	1833525	ug/kg	M	4.2E-005	mg/kg-day	-	mg/kg-dery	
	Pyrene	1411478	ug/kg	1411478	ug/kg	M	3.2E-005	mg/kg-day	-	mg/kg-day	-
	Methoxychlor	37714	ug/kg	37714	ug/kg	M	8.7E-007	mg/kg-day		mg/kg-day	-
	Antimony	3.7	mg/kg	3.7	mg/kg	M	8.5E-008	mg/kg-day	-	mg/kg-day	_
	Arsenic	46	mg/kg	46	mg/kg	M	1.1E-006	mg/kg-day	1.5E+000	mg/kg-day	1.6E-006
	Copper	253	mg/kg	253	mg/kg	M	5.8E-006	mg/kg-day	-	mg/kg-day	-
	Manganesa	239	mg/kg	239	mg/kg	M	5.5E-006	mg/kg-day	-	mg/kg-day	
	Thellum	0.9	mg/kg	0.9	mg/kg	M	2.1E-008	mg/kg-day	-	mg/kg-day	-
	Zinc (Tot	981 ni)	mg/kg	981	mg/kg	. M	2.3E-005	mg/kg-day	-	mg/kg-dey	1.0E-004
mei	Benzo(s)anthracene	468143	ug/kg	468143	ug/kg	M	2.9E-004	mg/kg-day	7.3E-001	mg/kg-day	2.1E-004
	Benzo(b)fluoranthene	540875	ug/kg	540875	ug/kg	M	3.3E-004	mg/kg-day	7.3E-001	mg/kg-day	2.4E-004
	Benzo(a)pyrene	426820	ug/kg	426620	ug/kg	M	2.6E-004	mg/kg-day	7.3E+000	mg/kg-day	1.9E-003
	Indeno(1,2,3-cd)pyrene	147910	ug/kg	147910	ug/kg	M	9.0E-005	mg/kg-day	7.3E-001	mg/kg-day	6.6E-005
	Dibenzo(s,h)entracene	42438	ug/kg	42438	ugAg	M	2.6E-005	mg/kg-day	7.3E+000	mg/kg-day	1.9E-004
	Naphthalene	100988	ug/kg	100988	ug/kg	M	6.2E-005	mg/kg-day	_	mg/kg-day	_
	2-Methylnaphthalene	498113	ug/kg	498113	ug/kg	M	3.0E-004	mg/kg-day	-	mg/kg-day	-
	Acenaphthene	355888	ug/kg	355888	ug/kg	M	2.2E-004	mg/kg-day	1 -	mg/kg-day	_
	Dibenzofuren	398113	ug/kg	398113	ug/kg	м	2.4E-004	mg/kg-day] _	mg/kg-day	
	Fluorene	583363	ug/kg	583363	ug/kg	M	3.6E-004	mg/kg-day	_	mg/kg-day	_
	Fluoranthene	1833525	ug/kg	1833525	ug/kg	M	1.1E-003	mg/kg-day	_	mg/kg-day	_
	Pyrene	1411478	ug/kg	1411478	ug/kg	M	8.6E-004	mg/kg-day	-	mg/kg-day	_
	Methoxychior	37714	ug/kg	37714	ug/kg	M)	1.8E-005	mg/kg-day	· -	mg/kg-day	_
	Antimony	3.7	mg/kg	3.7	mg/kg	м	1.7E-007	mg/kg-day	_	mg/kg-day	_
	Arsenic	46	mg/kg	46	mg/kg	M	6.5E-006	mg/kg-day	1.5E+000	mg/kg-day	9.7E-006
	Copper	253	mg/kg	253	mg/kg	м	1.2E-005	mg/kg-day	_	mg/kg-day	_
	Manganese	239	mg/kg	239	mg/kg	м	1.1E-005	mg/kg-day	_	mg/kg-day	-
	Thellum	0.9	mg/kg	0.9	mg/kg	м 1	4.2E-008	mg/kg-day	-	mg/kg-day	
	Zinc	981	mg/kg	981	mg/kg	м	4.6E-005	mg/kg-day	_	mg/kg-day	_
	(Tot		1	1		1		1	1	,	2.6E-003

⁽¹⁾ Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

TABLE 8.8.RME CALCULATION OF CANCER RISKS REASONABLE MAXIMUM EXPOSURE HORSESHOE ROAD COMPLEX SITE, SAYREVILLE, NEW JERSEY

Scenario Timeframe: Future Medium: Building Materials

Exposure Medium: Building Materials
Exposure Point: AOC 4 - ARC
Receptor Population: Site Workers
Receptor Age: Adult

Receptor Age: Adi

Exposure	Chemical	Medium	Medium	Route	Route	EPC	intake	intake	Cancer Slope	Cancer Slope	Cancer
Route	of Potential	EPC	EPC	EPC	EPC	Selected	(Cancer)	(Cancer)	Factor	Dose Units	Risk
	Concern	Value	Units	Value	Units	for Hazard		Units	· .		
						Calculation (1)					
gestion		·		-548 (20 15) 18 19							
	Aroclor-1254	30000	ug/kg	30000	ug/kg	M	5.4E-008	mg/kg-day	2.0E+000	mg/kg-day	1.1E-005
	2,3,7,8-TCDD equiv.	17	ug/kg	17	ug/kg	M	3.1E-009	mg/kg-day	1.5E+005	mg/kg-day	4.6E-004
	Antimony	31700	mg/kg	31700	mg/kg	M	5.7E-003	mg/kg-day	- 1	mg/kg-day	
	Arsenic	254	mg/kg	254	mg/kg	M	4.6E-005	mg/kg-day	1.5E+000	mg/kg-day	6.9E-005
	(Total)					1		ļ			5.4E-004
rmal			1								
	Aroclor-1254	30000	ug/kg	30000	ug/kg	M	8.4E-005	mg/kg-day	2.0E+000	mg/kg-day	1.7E-004
	2,3,7,8-TCDD equiv.	17	ug/kg	17	ug/kg	M	1.0E-008	mg/kg-day	1.5E+005	mg/kg-day	1.5E-003
	Antimony	31700	mg/kg	. 31700	mg/kg	M	6.3E-003	mg/kg-day] -	mg/kg-day	-
	Arsenic	254	mg/kg	254	mg/kg	M	1.5E-004	mg/kg-day	1.5E+000	mg/kg-day	2.3E-004
	(Total)		1			1))		1		ĺ	1.9E-003

⁽¹⁾ Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

 ^{- -} Cancer Slope Factor not available, therefore Cancer Risk not calculated.
 N/A - Not Applicable.

TABLE 8.8.CT CALCULATION OF CANCER RISKS CENTRAL TENDENCY EXPOSURE HORSESHOE ROAD COMPLEX SITE, SAYREVILLE, NEW JERSEY

Scenario Timeframe: Future Medium: Bulkling Materials Exposure Medium: Bulkling Materials Exposure Point: AOC 4 - ARC Receptor Poputation: Site Workers Receptor Age: Adult

Exposure Roule	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazerd Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Stope Factor	Cancer Slope Dose Units	Cancer Risk
gestion .											1
	Arodor-1254	5599	ug/kg	5599	ug/kg	M	1.3E-007	mg/kg-day	2.0E+000	mg/kg-day	2.6E-007
	2,3,7,8-TCDD equiv.	3.2	ug/kg	3.2	ug/kg	M	7.4E-011	mg/kg-day	1.5E+005	mg/kg-day	1.1E-005
	Anilmony	9017	mg/kg	9017	mg/kg	M	2.1E-004	mg/kg-day	-	mg/kg-day	-
	Arsenic	155	mg/kg	155	mg/kg	M	3.6E-006	mg/kg-day	1.5E+000	mg/kg-day	5.3E-006
	(Total)		'						Į.		1.7E-005
ermel					l			I			1
	Arocior-1254	5599	ug/kg	5599	ug/kg .	M.	3.7E-006	mg/kg-day	2.0E+000	mg/kg-day	7.4E-006
	2,3,7,8-TCDD equiv.	3.2	ug/kg	3.2	ug/kg	M	4.5E-010	mg/kg-day	1.5E+005	mg/kg-day	6.8E-005
	Antimorty	9017	mg/kg	9017	mg/kg	M	4.2E-004	mg/kg-day	_	mg/kg-day	-
	Arsenic	155	mg/kg	155	mg/kg	M	2.2E-005	mg/kg-day	1.5E+000	mg/kg-day	3.3E-005
	(Total)										1.1E-004

⁽¹⁾ Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

⁻⁻⁻ Cancer Slope Factor not available, therefore Cancer Risk not calculated. N/A - Not Applicable.

TABLE 8.9.RME CALCULATION OF CANCER RISKS REABONABLE MAXIMUM EXPOSURE HORSESHOE ROAD COMPLEX SITE, SAYREVILLE, NEW JERSEY

Scenario Timeframe: Future
Medium: Buikling Materials
Exposure Medium: Buikling Materials
Exposure Point: AOC 2 - ADC
Receptor Population: Construction Workers
Receptor Age: Adult

Exposure Roule	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cander Slope Factor	Cahcer Slope Dose Units	Cancer Risk
ngestion	Benzo(a)antiracene	1100000	ug/kg	1100000	ug/kg		1.9E-005	· mg/kg-day	7.3E-001	mg/kg-day	1.4E-005
	Benzo(b)fluoranthene	1400000	ug/kg	1400000	ug/kg	M	2.4E-005	mg/kg-day	7.3E-001	mg/kg-day	1.7E-005
	Benzo(a)pyrene	1100000	ug/kg	1100000	ug/kg	M	1.9E-005	mg/kg-day	7.3E+000	mg/kg-day	1.4E-004
	Indeno(1,2,3-cd)pyrene	300000	ug/kg	300000	ug/kg	M	5.1E-006	mg/kg-day	7.3E-001	mg/kg-day	3.7E-006
	Dibenzo(a,h)anthracene	90000	ulg/kg	90000	ug/kg	M	1.5E-006	mg/kg-day	7.3E+000	mg/kg-day	1.1E-008
	Naphthalene	320000	ug/kg	320000	υg√kg	M	5.4E-006	mg/kg-day	_	mg/kg-day	-
	2-Methylnaphthalene	1100000	ug/kg	1100000	ug/kg	M	1.9E-005	mg/kg-day		mg/kg-day	
	Acenaphthehe	800000	ug/kg	800000	ug/kg	M)	1.4E-005	mg/kg-day	_	mg/kg-day	- (
	Dibenzofuran	1000000	ug/kg	1000000	ug/kg	M	1.7E-005	mg/kg-day	_	mg/kg-day	_
	Fluorene	1600000	ug/kg	1600000	ug/kg	M	2.7E-005	mg/kg-day		mg/kg-day	_
	Fluoranthene	3900000	ùg∕kg	3900000	∪g/kg	M	6.6E-005	mg/kg-day		mg/kg-day	
	Pyrene	2800000	ug/kg	2800000	ug/kg	M	4.8E-005	mg/kg-day	-	mg/kg-day	
	Methoxychlor	150000	ug/kg	150000	ug/kg	M	2.6E-006	mg/kg-day	-	mg/kg-day	_
	Antimony	5.7	mg/kg	5.7	mg/kg	M	9.7E-008	mg/kg-day	-	mg/kg-day	
	Arsenic	84	mg/kg	84	mg/kg	M	1.4E-006	mg/kg-day	1.5E+000	mg/kg-day	2.1E-006
	Copper	495	mg/kg	495	mg/kg	M	8.4E-006	mg/kg-day		mg/kg-day	
	Manganese	495	mg/kg	495	mg/kg	M	8.4E-006	mg/kg-day		mg/kg-day	
	Thallium	1.8	mg/kg	1.8	mg/kg	M	3.1E-008	mg/kg-day		mg/kg-day	1
	Zinc	3050	mg/kg	3050	mg/kg	M	5.2E-005	mg/kg-day		mg/kg-day	
	(Tol			, ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		"	0.2.2.200			mgmg day	1.8E-004
ermal	Benzo(a)anthracene	1100000	ug/kg	1100000	ug/kg	M	3.1E-005	mg/kg-day	7.3E-001	mg/kg-day	2.3E-005
	Benzo(b)fluoranthene	1400000	ug/kg	1400000	ug/kg	M	4.0E-005	mg/kg-day	7.3E-001	mg/kg-day	2.9E-005
	Benzo(a)pyrene	1100000	ug/kg	1100000	ug/kg	M	3.1E-005	mg/kg-day	7.3E+000	mg/kg-day	2.3E-004
	Indeno(1,2,3-cd)pyrene	300000	ug/kg	300000	ug/kg	M	8.6E-006	mg/kg-day	7.3E-001	mg/kg-day	6.3E-006
	Dibenzo(a,h)anthracene	90000	ug/kg	90000	ug/kg	i m	2.6E-006	mg/kg-day	7.3E+000	mg/kg-day	1.9E-005
	Naphthalene	320000	ug/kg	320000	ug/kg	м	9.2E-006	mg/kg-day		mg/kg-day	_
	2-Methylnaphthalene	1100000	ug/kg	1100000	ug/kg	м	3.1E-005	mg/kg-day		mg/kg-day	
	Acenaphthene	800000	ug/kg	800000	ug/kg	,	2.3E-005	mg/kg-day		mg/kg-day	\ _
	Dibenzofuran	1000000	ug/kg	1000000	ug/kg	M	2.9E-005	mg/kg-day		mg/kg-day	_
	Fluorene	1600000	ug/kg	1600000	ug/kg	, m	4.6E-005	mg/kg-day		mg/kg-day	
	Fluoranthene	3900000	ug/kg	3900000	ug/kg	<u>"</u>	1.1E-004	mg/kg-day		mg/kg-day	
	Pyrene	2800000	ug/kg	2800000	ug/kg	M	8.0E-005	mg/kg-day		mg/kg-day	-
	Methoxychlor	150000	ug/kg	150000	ug/kg	M	3.3E-006	mg/kg-day		mg/kg-day	
	Antimony	5.7	mg/kg	57	mg/kg	M	1.3E-008	mg/kg-day		mg/kg-day	
	Arsenic	84	mg/kg	84	mg/kg	M (5.5E-007	mg/kg-day	1 5E+000	mg/kg-day	8 3E-00
	Copper	495	mg/kg	495	mg/kg	, m	1.1E-006	mg/kg-day	135400	mg/kg-day	0.31001
	Manganese	495	mg/kg	495	mg/kg	M M	1.1E-006	mg/kg-day		, , ,	_
	Thatium	1.8	· -	1.8		M	4.0E-009	1	ł.	mg/kg-day	-
	Zinc	3050	mg/kg mg/kg	3050	mg/kg ma/ka	M	6.7E-009	mg/kg-day		mg/kg-day	_
	(Tot	}	mg/kg	3000	mg/kg	IVI	0.76-000	mg/kg-day		mg/kg-day	3 1E-004

⁽¹⁾ Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

TABLE 8.9.CT CALCULATION OF CANCER RISKS CENTRAL TENDENCY EXPOSURE HORSESHOE ROAD COMPLEX SITE, SAYREVILLE, NEW JERSEY

Scenario Timeframe: Future
Medium: Building Materials
Exposure Medium: Building Materials
Exposure Point: AOC 2 - ADC
Receptor Population: Construction Workers
Receptor Age: Adult

Exposure	Chemical	Medium	Medium	Route	Route	EPC	intake	intake	Cencer Slope	Cancer Slope	Cancer
Route	of Potential	EPC	EPC	EPC	EPC	Selected	(Cancer)	(Cancer)	Factor	Dose Units	Risk
	Concern	Value	Units	Value	Units	for Hazard Calculation (1)		Units			
gestion	Benzo(a)anthracene	468143	ug/kg	468143	ug/kg		8.0E-006	mg/kg-day	7.3E-001	mg/kg-day	5.8 E-00
	Benzo(b)fluoranthene	540875	ug/kg	540875	ug/kg	M	9.2E-006	mg/kg-day	7.3E-001	mg/kg-day	6.7E-00
	Benzo(e)pyrene	426620	ug/kg	426620	ug/kg	M	7.3E-006	mg/kg-day	7.3E+000	mg/kg-day	5.3E-00
	Indeno(1,2,3-cd)pyrene	147910	ug/kg	147910	ug/kg	M	2.5E-006	mg/kg-day	7.3E-001	mg/kg-day	1.8E-00
	Dibenzo(e,h)anthracene	42438	ug/kg	42438	ug/kg	M	7.2E-007	mg/kg-day	7.3E+000	mg/kg-day	5.3E-00
	Naphthalene	100988	ug/kg	100988	ug/kg	M	1.7E-006	mg/kg-day	- '	mg/kg-day	-
	2-Methylnaphthalene	498113	ug/kg	498113	ug/kg	M.	8.5E-006	mg/kg-day	-	mg/kg-day	-
	Acenaphthene	355888	ug/kg	355888	ug/kg	M	6.1E-006	mg/kg-day	-	mg/kg-day	-
	Dibenzofuran	398113	ug/kg	398113	ug/kg	M	6.8E-006	mg/kg-day	-	mg/kg-day	-
	Fluorene	583363	ug/kg	583363	ug/kg	M	9.9E-006	mg/kg-day	-	mg/kg-day	-
	Fluoranthene	1833525	ug/kg	1833525	ug/kg	M	3.1E-005	mg/kg-day		mg/kg-day	-
	Pyrene	1411478	ug/kg	1411478	ug/kg	M	2.4E-005	mg/kg-day	-	mg/kg-day	-
	Methoxychlor	37714	ug/kg	37714	ug/kg	M	6.4E-007	mg/kg-day	-	mg/kg-day	-
	Antimony	3.7	mg/kg	3.7	mg/kg	M	6.3E-008	mg/kg-day] -	mg/kg-day	~
	Arsenic	46	mg/kg	46	mg/kg	M I	7.8E-007	mg/kg-day	1.5E+000	mg/kg-day	1.2E-00
	Copper	253	mg/kg	253	mg/kg	M	4.3E-006	mg/kg-day	-	mg/kg-day	-
-	Manganese	239	mg/kg	239	mg/kg	M	4.1E-006	mg/kg-day	-	mg/kg-day	_
	Theilum	0.9	mg/kg	0.9	mg/kg	M	1.5E-008	mg/kg-day	-	mg/kg-day	
	Zinc (Tot	981	mg/kg	981	mg/kg	м	1.7E-005	mg/kg-day	-	mg/kg-day	7.4E-00
ermei	Benzo(a)anthracene	468143	ug/kg	468143	ug/kg	M	1.3E-005	mg/kg-day	7.3E-001	mg/kg-day	9.8E-00
	Benzo(b)fluorenthene	540875	ug/kg	540875	ug/kg	M	1.5E-005	mg/kg-day	7.3E-001	mg/kg-day	1.1E-00
	Benzo(a)pyrene	426620	ug/kg	426620	ug/kg	. M	1.2E-005	mg/kg-day	7.3E+000	mg/kg-day	8.9E-00
	Indeno(1,2,3-cd)pyrene	147910	ug/kg	147910	ug/kg	M	4.2E-006	mg/kg-day	7.3E-001	mg/kg-day	3.1E-00
	Dibenzo(a,h)an#tracene	42438	ug/kg	42438	ug/kg	M	1.2E-006	mg/kg-day	7.3E+000	mg/kg-day	8.9E-00
	Naphthalene	100988	ug/kg	100988	ug/kg	M	2.9E-006	mg/kg-day	-	mg/kg-day	-
	2-Methylnephthalene	498113	ug/kg	498113	ug/kg	M	1.4E-005	mg/kg-day	-	mg/kg-day	_
	Acenephthene	355888	ug/kg	355888	ug/kg	M	1.0E-005	mg/kg-day	_	mg/kg-day	_
	Dibenzofuran	398113	ug/kg	398113	ug/kg	M	1.1E-005	mg/kg-day	-	mg/kg-day	-
	Fluorene	583363	ug/kg	583363	ug/kg	M	1.7E-005	mg/kg-day	-	mg/kg-day	
	Fluoranthene	1833525	ug/kg	1833525	ug/kg	M	5.2E-005	mg/kg-day		mg/kg-day	-
	Pyrene	1411478	ug/kg	1411478	ug/kg	м	4.0E-005	mg/kg-day		mg/kg-dey	-
	Methoxychlor	37714	ug/kg	37714	ug/kg	- M	8.3E-007	mg/kg-day	_	mg/kg-day	-
	Antimony	3.7	mg/kg	3.7	mg/kg	M	8.1E-009	mg/kg-day	-	mg/kg-day	-
	Arsenic	46	mg/kg	46	mg/kg	M	3.0E-007	mg/kg-day	1.5E+000	mg/kg-day	4.6E-00
	Copper	253	mg/kg	253	mg/kg	M	5.6E-007	mg/kg-day	-	mg/kg-day	-
	Manganese	239	mg/kg	239	mg/kg	M	5.3E-007	mg/kg-day	-	mg/kg-day	-
	Theilium	0.9	mg/kg	0.9	mg/kg	M	2.0E-009	mg/kg-day	-	mg/kg-day	-
	Zinc	981	mg/kg	981	mg/kg	M	2.2E-006	mg/kg-day		mg/kg-day	1.2E-00

⁽¹⁾ Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

TABLE 8.9.RME CALCULATION OF CANCER RISKS REASONABLE MAXIMUM EXPOSURE HORSESHOE ROAD COMPLEX SITE, SAYREVILLE, NEW JERSEY

Scenario Timeframe: Future

Medium: Building Materials

Exposure Medium: Building Materials

Exposure Point: AOC 4 - ARC

Receptor Population: Construction Workers

Exposure	Chemical	Medium	Medium	Route	Route	EPC	intake	Intake	Cancer Slope	Cancer Slope	Cancer
Route	of Potential	EPC	EPC	EPC	EPC	Selected	(Cancer)	(Cancer)	Factor	Dose Units	Risk
	Concern	Value	Units	Value	Units	for Hazard		Units			
						Calculation (1)					
gestion				The second secon	2.20	t	ing galacina is a survivor to distrib i				
	Aroctor-1254	30000	ug/kg	30000	ug/kg	M	5.1E-007	mg/kg-day	2.0E+000	mg/kg-day	1.0E-006
	2,3,7,8-TCDD equiv.	17	ug/kg	17	ug/kg	M	2.9E-010	mg/kg-day	1.5E+005	mg/kg-day	4.3E-005
	Antimony	31700	mg/kg	31700	mg/kg	M	5.4E-004	mg/kg-day	-	mg/kg-day] -
	Arsenic	254	mg/kg	254	mg/kg	M.	4.3E-008	mg/kg-day	1.5E+000	mg/kg-day	6.5E-006
	(Total)							1			5.1E-005
erma!											
	Aroclor-1254	30000	ug/kg	30000	ug/kg	M	9.2E-007	mg/kg-day	2.0E+000	mg/kg-day	1.8E-008
	2,3,7,8-TCDD equiv.	17	ug/kg	17	ug/kg	M	1.1E-010	mg/kg-day	1.5E+005	mg/kg-day	1.7E-005
	Antimony	31700	mg/kg	31700	mg/kg	M	7.0E-005	mg/kg-day	-	mg/kg-day	-
	Arsenic	254	mg/kg	254	mg/kg	M	1.7E-006	mg/kg-day	1.5E+000	mg/kg-day	2.5E-006
	(Total)		1			1			1		2.1E-005

⁽¹⁾ Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

^{-- -} Cancer Slope Factor not available, therefore Cancer Risk not calculated.

N/A - Not Applicable.

TABLE 8.10.RME CALCULATION OF CANCER RISKS REASONABLE MAXIMUM EXPOSURE HORSESHOE ROAD COMPLEX SITE, SAYREVILLE, NEW JERSEY

Scenario Timeframe: Future

Medium: Surface Water

Exposure Medium: Surface Water Exposure Point: AOC 5 - DSM Receptor Population: Residents

Receptor Age: Adult

Exposure Route	Chemical of Potential Concern		Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Cahcer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
Ingestion	Arsenic		0.569	mg/l	0.569	mg/l	M	2.3E-005	mg/kg-day	1.5E+000	mg/kg-day	3.5E-005
	Manganese		1.19	mg/l	1.19	mg/l	M	4.9E-005	mg/kg-day	-	mg/kg-day	
		(Total)		1								3.5E-005
Dermal	Arsenic		0.569	mg/i	0.569	mg/l	М	1.1E-005	mg/kg-day	1.5E+000	mg/kg-day	1.6E-005
	Manganese	- 1	1.19	mg/l	1.19	mg/l	M	2.3E-005	mg/kg-day		mg/kg-day	_
		(Total)										1.6E-005
	The state of the s			The state of the s		and the second s	THE RESERVE AND THE PARTY AND	** AND THE PARTY OF THE PARTY O	TOTA	L RISK ACROSS	ALL PATHWAYS	5.1E-005

(1) Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

-- Cancer Slope Factor not available, therefore Cancer Risk not calculated. N/A - Not Applicable.

TABLE 8.10.RME CALCULATION OF CANCER RISKS REASONABLE MAXIMUM EXPOSURE HORSESHOE ROAD COMPLEX SITE, SAYREVILLE, NEW JERSEY

Scenario Timeframe: Future

Medium: Surface Water

Exposure Medium: Surface Water Exposure Point: AOC 6 - RR Receptor Population: Residents

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hezard Calculation (1)	Intake (Cancer)	Infake (Cancer) Units	Cancer Slope Factor	Cancer Sidpe Factor Units	Cancer Risk
ngestion	Aluminum	2.31	mg/l	2.31	mg/l	м	9.5E-005	mg/kg-day		mg/kg-day	
	Antimony	0.0057	mg/l	0.0057	mg/l	M	2.3E-007	mg/kg-day	_	mg/kg-day	• -
	Arsenic	0.02	mg/l	0.02	mg/l	м	8.2E-007	mg/kg-day	. 1.5E+000	mg/kg-day	1.2E-008
	Copper	0.249	mg/l	0.249	mg/l	м	1.0E-005	mg/kg-day	-	mg/kg-day	-
	Manganese	0.101	mg/l	0.101	mg/l	м	4.1E-008	mg/kg-day	-	mg/kg-day	-
	Thallium	0.005	mg/l	0.005	mg/l	м	2.1E-007	mg/kg-day	_	mg/kg-day	<i>-</i> -
	Vanadium	0.0186	mg/l	0.0186	mg/l	M	7.6E-007	mg/kg-day	-	mg/kg-day	- .
	(Total)										1.2E-008
ermal	Aluminum	2.31	mg/l	2.31	mg/i	М	4.4E-005	mg/kg-day	-	mg/kg-day	-
	Antimony	0.0057	mg/l	0.0057	mg/l	М [1.1E-007	mg/kg-day	-	mg/kg-day	-
	Arsenic	0.02	mg/l	0.02	mg/l	M ·	3.8E-007	mg/kg-day	1.5E+000	mg/kg-day	5.7E-007
	Copper	0.249	mg/l	0.249	mg/l	M	4.7E-008	mg/kg-day	-	mg/kg-day	
	Manganese	0.101	mg/l	0.101	mg/l	т м	1.9E-006	mg/kg-day	-	mg/kg-day	
	Thallium	0.005	mg/l	0.005	mg/f	M	9.5E-008	mg/kg-day] -	mg/kg-day	, "
	Vanadium	0.0186	mg/l	0.0186	mg/l	м	3.5E-007	mg/kg-day	-	mg/kg-day	
	(Total)								1 .		5.7E-007

⁽¹⁾ Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

⁻⁻⁻ Cancer Slope Factor not available, therefore Cancer Risk not calculated. N/A - Not Applicable.

TABLE 8.11.RME CALCULATION OF CANCER RISKS REASONABLE MAXIMUM EXPOSURE HORSESHOE ROAD COMPLEX SITE, SAYREVILLE, NEW JERSEY

Scenario Timeframe: Future
Medium: Surface Water
Exposure Medium: Surface Water
Exposure Point: AOC 5 - DSM
Receptor Population: Residents

Receptor Age: Child

Exposure	Chemical	Medium	Medium	Route	Route	EPC	Intake	Intake	Cancer Slope	Cancer Slope	Cancer
Route	of Potential Concern	EPC Value	EPC Units	EPC Value	EPC Units	Selected for Hazard Calculation (1)	(Cahcer)	(Cancer) Units	Factor	Factor Units	Risk
Manganese	1.19	mg/l	1.19	mg/l	M	5.8E-005	mg/kg-day		mg/kg-day		
(Total)		ļ ·							,	4.2E-005	
Dermal	Arsenic	0.569	mg/l	0.569	mg/l	M	4.4E-006	mg/kg-day	1.5E+000	mg/kg-day	6.7E-006
	Manganese	1.19	mg/l	1.19	mg/l	M	9.3E-006	mg/kg-day		mg/kg-day	
	(Total)))								6.7E-006

(1) Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

-- - Cancer Slope Factor not available, therefore Cancer Risk not calculated. N/A - Not Applicable.

TABLE 8.11 RME CALCULÁTION OF CANCÉR RISKS REASONABLE MAXIMUM EXPOSURE HORSESHOE RÓAD COMPLEX SITE, SAYREVILLE, NEW JERSEY

Scenario Timeframe: Future

Medium: Surface Water

Exposure Medium: Surface Water Exposure Point: AOC 6 - RR Receptor Population: Residents

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Factor Units	Cancer Risk
ngestion	Aluminum	2.31	mg/l	2.31	mg/l	M	1.1E-004	mg/kg-day	**	mg/kg-day	
	Antimony	0.0057	mg/l	0.0057	mg/l	M	2.8E-007	mg/kg-day		mg/kg-day	-
	Arsenic	0.02	mg/l	0.02	mg/l	M	9.8E-007	mg/kg-day	1.5E+000	mg/kg-day	1.5E-008
	Copper	0.249	mg/l	0.249	mg/l	M	1.2E-005	mg/kg-day	-	mg/kg-day	_
	Manganese	0.101	mg/t	0.101	mg/l	M]	4.9E-006	mg/kg-day	-	mg/kg-day	~
	Thallium	0.005	mg/l	0.005	mg/l	М .	2.5E-007	mg/kg-day		mg/kg-day	<u> -</u>
	Vanadium	0.0188	mg/l	0.0186	mg/i	M	9.1E-007	mg/kg-day		mg/kg-day	_
	(Total)										1.5E-006
ermal	Aluminum	2.31	mg/l	2.31	mg/l	M	1.8E-005	mg/kg-day	-	mg/kg-day	
	Antimony	0.0057	mg/l	0.0057	mg/l	. M	4.4E-008	mg/kg-day	-	mg/kg-day	
	Arsenic	0.02	mg/l	0.02	mg/l	М	1.6E-007	mg/kg-day	1.5E+000	mg/kg-day	2.3E-007
	Copper	0.249	mg/l	0.249	mg/l	M	1.9E-006	mg/kg-day	-	mg/kg-day	
	Manganese	0.101	mg/l	0.101	mg/l	M	7.9E-007	mg/kg-day	_ :	mg/kg-day	
	Thallium	0.005	mg/l	0.005	mg/l	M	3.9E-008	mg/kg-day	_	mg/kg-day	
	Vanadium	0.0188	mg/l	0.0186	mg/l	м	1.5E-007	mg/kg-day	_	mg/kg-day	
	(Total)										2.3E-007

⁽¹⁾ Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

^{-- -} Cancer Slope Factor not available, therefore Cancer Risk not calculated. N/A - Not Applicable.

TABLE 8.12.RME CALCULATION OF CANCER RISKS REASONABLE MAXIMUM EXPOSURE HORSESHOE ROAD COMPLEX SITE, SAYREVILLE, NEW JERSEY

Scenario Timeframe: Future

Medium: Sediment

Exposure Medium: Sediment Exposure Point: AOC 5 - DSM

Receptor Population: Residents

Receptor Age: Adult

Exposure	Chemical	Medium	Medium	Route	Route	EPC	Intake	Intake	Cancer Stope	Cancer Slope	Cancer
Route	of Potential	EPC	EPC	EPC	EPC	Selected	(Cancer)	(Cancer)	Factor	Dose Units	Risk
	Concérn	Valu e	Units	Value	Units	for Hazard Calculation (1)		Units			
ngestion	Benzo(a)anthracene	300	ug/kg	300	ug/kg	<u> </u>	9.8E-009	mg/kg-day	7.3E-001	mg/kg-day	7.0E-009
	Benzo(b)fluoranthene	730	ug/kg	730	ug/kg	M	2.3E-008	mg/kg-day	7.3E-001	mg/kg-day	1.7E-008
	Benzo(a)pyrene	300	ug/kg	300	ug/kg	M	9.6E-009	mg/kg-day	7.3E+000	mg/kg-day	7.0E-008
	Indeno(1,2,3-cd)pyrene	220	ug/kg	220	ug/kg	M	7.0E-009	hig/kg-day	7.3E-001	mg/kg-day	5.1E-009
	Aroclor-1254	470	ug/kg	470	ug/kg	М.	1.5E-008	mg/kg-day	2.0E+000	mg/kg-day	3.0E-008
	Arsenic	4030	mg/kg	4030	mg/kg	M	1.3E-004	ing/kg-day	1.5E+000	mg/kg-day	1.9E-004
	(те	otal)				1 (1.9E-004
)ermal	Benzo(a)anthracerte	300	ug/kg	300	ug/kg	M	3.2E-008	ing/kg-day	7.3E-001	mg/kg-day	2.3E-008
	Benzo(b)fluoranthene	730	ug/kg	730	ug/kg	M	7.7E-008	ing/kg-day	7.3E-001	mg/kg-day	5.6E-008
	Benzo(a)pyrene	300	ug/kg	300	ug/kg	м .	3.2E-008	mg/kg-day	7.3E+000	mg/kg-day	2.3E-007
	Indeno(1,2,3-cd)pyrene	220	ug/kg	220	ug/kg	м	2.3E-008	mg/kg-day	7.3E-001	mg/kg-day	1.7E-008
	Ároctor-1254	470	ug/kg	470	ug/kg	М	5.3E-008	mg/kg-day	2.0E+000	mg/kg-day	1.1E-007
	Arsenic	4030	mg/kg	4030	ug/kg	M	9:8E-005	mg/kg-day	1.5E+000	mg/kg-day	1.5E-004
	(10	otal)				1					1.5E-004

⁽¹⁾ Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

⁻ - Cancer Slope Factor not available, therefore Cancer Risk not calculated. $\mbox{N/A}$ - Not Applicable.

TABLE 8.12.CT CALCULATION OF CANCER RISKS CENTRAL TENDENCY EXPOSURE HORSESHOE ROAD COMPLEX SITE, SAYREVILLE, NEW JERSEY

Scenario Timeframe: Future

Medium: Sediment

Exposure Medium: Sediment Exposure Point: AOC 5 - DSM Receptor Population: Residents

Receptor Age: Adult

Exposure	Chemical	Medium	Medium	Route	Route	EPC	Intake	Intake	Cancer Stope	Cancer Slope	Cancer
Route	of Potential	EPC	EPC	EPC	EPC	Selected	(Cancer)	(Cancer)	Factor	Dose Units	Risk
	Concern	Value	Units	Value	Units	for Hazard Calculation (1)		Units			
ngestion	Benzo(a)anthracene	300	ug/kg	300	ug/kg	M	3.6E-009	mg/kg-day	7.3E-001	mg/kg-day	2.6E-009
	Benzo(b)fluoranthene	407	ug/kg	407	ug/kg	M	4.9E-009	mg/kg-day	7.3E-001	mg/kg-day	3.6E-009
	Benzo(a)pyrene	300	ug/kg	300	ug/kg	M	3.6E-009	mg/kg-day	7.3E+000	mg/kg-day	2.6E-008
	Indeno(1,2,3-cd)pyrene	220	ug/kg	220	ug/kg	м	2.6E-009	mg/kg-day	7.3E-001	mg/kg-day	1.9E-009
	Aroclor-1254	387	ug/kg	387	ug/kg	M	4.6E-009	mg/kg-day	2.0E+000	mg/kg-day	9.3E-009
	Arsenic	1917	mg/kg	1917	mg/kg	. М	2.3E-005	mg/kg-day	1.5E+000	mg/kg-day	3.5E-005
	(То	tal)						-			3.5E-005
ermal	Benzo(a)anthracene	300	ug/kg	300	ug/kg	M	1.2E-008	mg/kg-day	7.3E-001	mg/kg-day	8.8E-009
	Benzo(b)fluoranthene	407	ug/kg	407	ug/kg	M	1.6E-008	mg/kg-day	7.3E-001	mg/kg-day	1.2E-008
	Benzo(a)pyrene	300	ug/kg	300	ug/kg	M	1.2E-008	mg/kg-day	7.3E+000	mg/kg-day	8.8E-008
	Indeno(1,2,3-cd)pyrene	220	ug/kg	220	ug/kg	м	8.9E-009	mg/kg-day	7.3E-001	mg/kg-day	6.5E-009
	Aroclor-1254	387	ug/kg	387	ug/kg	M	1.7E-008	mg/kg-day	2.0E+000	mg/kg-day	3.4E-008
	Arsenic	1917	mg/kg	1917	ug/kg	M	1.8E-005	mg/kg-day	1.5E+000	mg/kg-day	2.7E-005
	По	tal)				1					2.7E-005

⁽¹⁾ Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

N/A - Not Applicable.

⁻⁻ Cancer Slope Factor not available, therefore Cancer Risk not calculated.

TABLE 8.12.RME CALCULATION OF CANCER RISKS REASONABLE MAXIMUM EXPOSURE HORSESHOE ROAD COMPLEX SITE, SAYREVILLE, NEW JERSEY

Scenario Timeframe: Future

Medium: Sediment

Exposure Medium: Sediment Exposure Point: AOC 6 - RR Receptor Population: Residents

Receptor Age: Adult

ł			+			. 			
		1	1	1 1	l .	1			
2200	mg/kg	2200	mg/kg	M	7.0E-005	mg/kg-day	1.5E+000	mg/kg-day	1.1E-004
3560	mg/kg	3560	mg/kg	M	1.1E-004	mg/kg-day		mg/kg-day	
(Total)				1					1.1E-004
2200	mg/kg	2200	mg/kg	М	5.3E-005	mg/kg-day	1.5E+000	mg/kg-day	8.0E-005
3560	mg/kg	3560	mg/kg	M	2.9E-005	mg/kg-day		mg/kg-day	-
(Total)									8.0E-005
	(Total) 2200 3560 (Total)	(Total) 2200 mg/kg 3560 mg/kg (Total)	(Total) 2200 mg/kg 2200 3560 mg/kg 3560 (Total)	(Total) 2200 mg/kg 2200 mg/kg 3560 mg/kg (Total) 3560 mg/kg	(Total) 2200 mg/kg 2200 mg/kg M 3560 mg/kg 3560 mg/kg M (Total)	(Total) 2200 mg/kg 2200 mg/kg M 5.3E-005 3560 mg/kg 3560 mg/kg M 2.9E-005 (Total)	(Total) 2200 mg/kg 2200 mg/kg M 5.3E-005 mg/kg-day 3560 mg/kg 3560 mg/kg M 2.9E-005 mg/kg-day (Total)	(Total) 2200 mg/kg 2200 mg/kg M 5.3E-005 mg/kg-day 1.5E+000 mg/kg 3560 mg/kg M 2.bE-005 mg/kg-day (Total) Total Risk Across All E	(Total) 2200 mg/kg 2200 mg/kg M 5.3E-005 mg/kg-day 1.5E+000 mg/kg-day 3560 mg/kg 3560 mg/kg M 2.9E-005 mg/kg-day

(1) Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

- - Cancer Slope Factor not available, therefore Cancer Risk not calculated. N/A - Not Applicable.

TABLE 8.12.CT CALCULATION OF CANCER RISKS CENTRAL TENDENCY EXPOSURE HORSESHOE ROAD COMPLEX SITE, SAYREVILLE, NEW JERSEY

Scenario Timeframe: Future

Medium: Sediment

Exposure Medium: Sediment Exposure Point: AOC 6 - RR Receptor Population: Residents

Receptor Age: Adult

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Stope Dose Units	Cancer Risk
Ingestion	Arsenic Copper	450 1573	mg/kg mg/kg	450 1573	mg/kg mg/kg	M M.	5.4E-006 1.9E-005	mg/kg-day mg/kg-day	1.5E+000 —	mg/kg-day mg/kg-day	8.1E-008
Dermal	Arsenic (Total)	450	mg/kg	450	malka	M .	4.2E-008	mg/kg-day	1.5E+000	matter day	8.1E-008 8.3E-008
L'Olliai	Copper	1573	mg/kg	1573	mg/kg mg/kg	M	4.9E-006	mg/kg-day	1,027000	mg/kg-day mg/kg-day	_
	(Total)		<u> </u>	SETTE SE STORES EVENT	Lerwitzer zenen.			Tota	l Risk Across Ali E	posure Pathways	6.3E-006 1.4E-005

(1) Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

- - Cancer Slope Factor not available, therefore Cancer Risk not calculated. N/A - Not Applicable.

TABLE 8.13.RME CALCULATION OF CANCER RISKS REASONABLE MAXIMUM EXPOSURE HORSESHOE ROAD COMPLEX SITE, SAYREVILLE, NEW-JERSEY

Scenario Timeframe: Future

Medium: Sediment

Exposure Medium: Sediment
Exposure Point: AOC 5 - DSM
Receptor Population: Residents

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Dose Units	Cancer Risk
ngestion	Benzo(a)anthracene	300	ug/kg	300	ug/kg	M	2.3E-008	mg/kg-day	7.3E-001	mg/kg-day	1.8E-008
	Benzo(b)fluoranthene	730	ug/kg	730	ug/kg	M	5.5E-008	mg/kg-day	7.3E-001	mg/kg-day	4.0E-008
	Benzo(a)pyrene	300	ug/kg	300	ug/kg	M	2.3E-008	mg/kg-day	7.3E+000	mg/kg-day	1.6E-007
	Indeno(1,2,3-cd)pyrene	220	ug/kg	220	ug/kg	j. M	1.7E-008	mg/kg-day	7.3E-001	mg/kg-day	1.2E-008
	Aroctor-1254	470	ug/kg	470	ug/kg	M	3.5E-008	mg/kg-day	2.0E+000	mg/kg-day	7.1E-008
	Arsenic (Total)	4030	mg/kg	4030	mg/kg	M	3.0E-004	mg/kg-day	1.5E+000	mg/kg-day	4.5E-004 4.5E-004
ermal	Benzo(a)anthracene	300	ug/kg	300	ug/kg	M	2.3E-008	mg/kg-day	7.3E-001	mg/kg-day	1.7E-008
	Benzo(b)fluoranthene	730	ug/kg	730	ug/kg	M	5.7E-008	mg/kg-day	7.3E-001	mg/kg-day	4.2E-008
	Benzo(a)pyrene	300	ug/kg	300	ug/kg	M	2.3E-008	mg/kg-day	7.3E+000	mg/kg-day	1.7E-007
	Indeno(1,2,3-cd)pyrene	220	ug/kg	220	ug/kg	M	1.7E-008	mg/kg-day	7.3E-001	mg/kg-day	1.3E-008
	Aroclor-1254	470	ug/kg	470	ug/kg	M	3.9E-008	mg/kg-day	2.0E+000	mg/kg-day	7.9E-008
	Arsenic	4030	mg/kg	4030	ug/kg	M	7.3E-005	mg/kg-day	1.5E+000	mg/kg-day	1.1E-004
	(Total)										1.1E-004

⁽¹⁾ Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

^{-- -} Cancer Slope Factor not available, therefore Cancer Risk not calculated. N/A - Not Applicable.

TABLE 8.13.CT CALCULATION OF CANCER RISKS CENTRAL TENDENCY EXPOSURE HORSESHOE ROAD COMPLEX SITE, SAYREVILLE, NEW JERSEY

Scenario Timeframe: Future

Medium: Sediment

Exposure Medium: Sediment
Exposure Point: AOC 5 - DSM
Receptor Population: Residents

Exposure	Chemical	Medium	Medium	Route	Route	EPC	inta ke	Intake	Cancer Slope	Cancer Slope	Cancer
Route	of Potential	EPC	EPC	EPC	EPC	Selected	(Cancer)	(Cancer)	Factor	Dose Units	Risk
	Concern	Value	Units	Value	Units	for Hazard		Units		,	
				,		Calculation (1)					
ngestion	Benzo(a)anthracene	300	ug/kg	300	ug/kg		2.3E-008	mg/kg-day	7.3E-001	mg/kg-day	1.6E-008
	Benzo(b)fluoranthene	407	ug/kg	407	ug/kg	M	3.1E-008	mg/kg-day	7.3E-001	mg/kg-day	2.2E-008
	Benzo(a)pyrene	300	ug/kg	300	ug/kg	. м	2.3E-008	mg/kg-day	7.3E+000	mg/kg-day	1.6E-007
	Indeno(1,2,3-cd)pyrene	220	ug/kg	220	ug/kg	M	1.7E-008	mg/kg-day	7.3E-001	mg/kg-day	1.2E-008
	Aroclor-1254	387	ug/kġ	387	ug/kg	M	2.9E-008	mg/kg-day	2.0E+000	mg/kg-day	5.8E-008
	Arsenic	1917	rng/kg	1917	mg/kg	M	1.4E-004	mg/kg-day	1.5E+000	mg/kg-day	2.2E-004
		(Total)						1.			2.2E-004
ermal	Benzo(a)anthracene	300	ug/kg	300	ug/kg	M	2.3E-008	mg/kg-day	7.3E-001	mg/kg-day	1.7E-008
	Benzo(b)fluoranthene	407	ug/kg	407	ug/kg	M	3.2E-008	mg/kg-day	7.3E-001	mg/kg-day	2.3E-008
	Benzo(a)pyrene	300	ug/kg	300	ug/kg	M	2.3E-008	mg/kg-day	7.3E+000	mg/kg-day	1.7E-007
	Indeno(1,2,3-cd)pyrene	220	ug/kg	220	ug/kg	M	1.7E-008	mg/kg-day	7.3E-001	mg/kg-day	1.3E-008
	Arocior-1254	387	ug/kg	387	ug/kg	M	3.3E-008	mg/kg-day	2.0E+000	mg/kg-day	6.5E-008
	Arsenic	1917	mg/kg	1917	ug/kg	M	3.5E-005	mg/kg-day	1.5E+000	mg/kg-day	5.2E-005
		(Total)								1	5.2E-005

⁽¹⁾ Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

⁻⁻⁻ Cancer Slope Factor not available, therefore Cancer Risk not calculated. N/A - Not Applicable.

TABLE 8.13.RME CALCULATION OF CANCER RISKS REASONABLE MAXIMUM EXPOSURE HORSESHOE ROAD COMPLEX SITE, SAYREVILLE, NEW JERSEY

Scenario Timeframe: Future

Medium: Sediment

Exposure Medium: Sediment Exposure Point: AOC 6 - RR Receptor Population: Residents

Exposure	Chemical	Medium	Medium	Route	Route	EPC	Intake	Intake	Cancer Slope	Cancer Slope	Cancer
Route	of Patential	EPC	EPC	EPC	EPC	Selected	(Cancer)	(Cancer)	Factor	Dose Units	Risk
	Concern	Value	Units	Value	Units	for Hazard		Units			
						Calculation (1)					·
gestion	The second secon							I			== ==================================
	Arsenic	2200	mg/kg	2200	mg/kg	M	1.7E-004	mg/kg-day	1.5E+000	mg/kg-day	2.5E-004
	Copper	3560	mg/kg	3560	mg/kg	M	2.7E-004	mg/kg-day	-	mg/kg-day	
		Total)									2.5E-004
ermai	Arsenic	2200	mg/kg	2200	mg/kg	M	4.0E-005	mg/kg-day	1.5E+000	mg/kg-day	5.9E-005
	Copper	3560	mg/kg	3560	mg/kg	. м	2.1E-005	mg/kg-day		mg/kg-day	
		Total)						'			5.9E-005

⁽¹⁾ Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

⁻⁻⁻ Cancer Slope Factor not available, therefore Cancer Risk not calculated. N/A - Not Applicable.

TABLE 8.13.CT CALCULATION OF CANCER RISKS CENTRAL TENDENCY EXPOSURE HORSESHOE ROAD COMPLEX SITE, SAYREVILLE, NEW JERSEY

Scenario Timeframe: Future

Medium: Sediment

Exposure Medium: Sediment Exposure Point: AOC 6 - RR

Receptor Population: Residents

Receptor Age: Child

Exposure Route	Chemical of Potential Concern	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor	Cancer Slope Dose Units	Cancer Risk
ingestion	Arsenic Copper	450 1573	mg/kg mg/kg	450 1573	mg/kg mg/kg	M	3.4E-005 1.2E-004	mg/kg-day mg/kg-day	1.5E+000 —	mg/kg-day mg/kg-day	5.1E-005
Daniel	(Tota			450			0.45.000	ma Rei alam	4 55.000		5.1E-005
Dermal	Arsenic Copper	450 1573	mg/kg mg/kg	450 1573	mg/kg mg/kg	M M	8.1E-006 9.4E-006	mg/kg-day	1.5E+000	mg/kg-day mg/kg-day	1.2E-005 1.2E-005
	1	(Total) Total Risk Across All Exposure									

(1) Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

-- Cancer Stope Factor not available, therefore Cancer Risk not calculated. N/A - Not Applicable.

TABLE 9.1 RME

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCS

REASONABLE MAXIMUM EXPOSURE

HORSESHOE ROAD COMPLEX SITE, SAYREVILLE, NEW JERSEY

Scenario Timeframe: Current and Future Receptor Population: Area Residents (Trespessors Receptor Age: Youth (12-17 years)

Medium	Exposure Medium	Exposure Point	Chemical		Carc	inogenic Ris	k	Chamical		Non-Carc	nogenic i -la zar	d Quotient	
				Ingestion	Inheletion	Dermal	Exposure Routes Total		Primary Turget Organ	Ingestion	Inhalation	Dermal	Exposure Routes Tot
Z	Surface Soll	AOC 1 - HROD		manara (reservant de 1	The field special control of	Take Area - session a		The second of the second secon		er kværa tom mæer		. I THE CHARLES TO	0.000
1			Dieldrin	9.8E-008	-	2.5E-008	3.5E-008	Dieldrin	•	1.4E-004	-	3.6E-004	5.0E-004
į.		Į.	Aracior-1248	9.7E-008	_	3.5E-007	4.5E-007	Aroctor-1248	į.	1 - 1			
1			Aractor-1264	8.7E-009	-	3.1E-008	4.0E-008	Aroclor-1264		2.8E-003	_	8.9E-003	1.2E-002
- 1			Araclar-1260	7.3E-009	-	2.6E-006	3.3E-006	Arocior-1260	Ī	- 1	-	-	_
- 1		1	Aluminum	-	-	- '	-	Aluminum		8.6E-004	-	2.1E-004	1.1E-003
- 1		1	Antimony	_	- '	- 1	-	Antimony		5.1E-004	- '	1.3E-004	8.4E-004
- 1			Arsenic	4.16-007	-	3.1E-007	7.2E-007	Arsenic		1.1E-002	~	8.0E-003	1.9E-002
- 1			Cadmium	-	-	-	-	Cadmium		2.7E-004		6.8E-006	2.8E-004
		1	Copper	_	-		-	Copper		8.5E-004	-	1.8E-004	8.1E-004
- 1			Mengenese	-	-	l -	_	Menganese		1.1E-003	_	2.6E-004	1.4E-003
İ		1	Nickel	_	_ :	-	_	Nickei		3.2E-004	_	9.1E-006	4.0E-004
-			Silver	_	-	_	_	Silver		3.6E-004	_	9.0E-006	4.5E-004
1		1	Thelium	. -	_] _	-	Thellium		8.6E-004	_	2.1E-004	1.1E-00
		Í	Vanedium	_	_	_	_	Vanadium		5.6E-004	_	1.4E-004	8.9E-004
1		1.		Total) 5.3E-007		7.4E-007	1.3E-008	1 0	otal)	1.9E-002		1.9E-002	3.7E-002
eface Water	Surface Water	AOC 1 - HROD				1277 1111		· · · · · · · · · · · · · · · · · · ·	1				
			Vinyl Chloride	2.0E-008	-	2.0E-009	2.3E-008	Vinyl Chloride		-	-	_ :	-
1			Antimony	-		-		Antimony		7.6E-004	-	1.4E-006	7.8E-004
ł			Arsenic	3.6E-007		6.3E-009	3.8E-007	Areenic	1	9.0E-003	۱ ـ	1.6E-004	9.2E-005
1			Cadmium	_	۱ ـ	_	_	Cadmium	}	5.1E-004	ـ ا	9.4E-006	6.2E-004
ŀ		1	Copper	_	-	l -	-	Copper		9.25-004	-	1.7E-006	9.4E-004
- 1		1	Monganese	_	_ ا	_	_	Mengenese		1.3E-003	_	2.4E-006	1.3E-003
1		1	Nickel	1 -	١ -	_	-	Nickel	1	6.2E-002	۱ -	1.1E-004	8.2E-002
- 1		i		Total) 3.7E-007		8.9E-009	3.8E-007	ή	otal)	7.4E-002		3.4E-004	7.4E-002
diment	Sediment	AOC 1 - HROD					127	1	- 1				
1			Antimony	_	ا ۔	- 1	-	Antimony		6.4E-003	_	5.9E-004	7.0E-003
Í		1	Areanic	1.76-006	-	4.7E-006	2.2E-005	Artenic	1	4.4E-001	_	1.2E-001	5.8E-001
		1	Copper	-	l <u>-</u>	-	-	Copper	1	1.6E-002	l <u>-</u>	1.6E-003	1.8E-002
- [Manganese	l			l -	Manganese	l	1.0E-002	۱ -	9.5E-004	1.1E-002
· [1	Thellum		۱ ـ		_	Thellium		5.7E-003	۱ ـ	5.2E-004	6.2E-00
- 1		1		Total) 1.7E-005	····- <u>-</u>	4.7E-006	2.1E-006		otal)	4.8E-001	····· <u>-</u>	1.2E-001	6.0E-00
		·	vector and the second of the s		Total Blak Ar	cross/Medial			Total Hazard Index /		Se and All Eve		7.1E-00

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TABLE 9.1.RME

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPC® REASONABLE MAXIMUM EXPOSURE

HORSESHOE ROAD COMPLEX SITE, SAYREVILLE, NEW JERSEY

Scenario Timeframe: Current and Future Receptor Population: Area Residents (Trespassers Receptor Age: Youth (12-17 years)

Medium	Exposure Medium	Exposure Point	Chemical		Care	shogenic Risi	k	Chemical		Non-Care	nogenic Hazar	d Quotient	
	,			Ingestion	Inhalation	Dermal	Exposure Routes Total		Primery Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
ioli	Surface Soil	AOC 2 - AOC	AND THE STREET OF STREET, AND AND ADDRESS OF A STREET, AND A STREET, AND A STREET, AND A STREET, AND A STREET, AND A STREET, AND A STREET, AND A STREET, AND A STREET, AND A STREET, AND A STREET, AND A STREET, AND A STREET	to receive the control of	e ne comerciae	******			and the state of the second	diction of the same	ar a tternace m ercen	AND AND A COLUMN	CONTRACTOR OF THE PERSON
			Benzo(s)anthracene	7.8E-008	l	2.6E-007	3.4E-007	Benzo(a)anthracene	_	-	_		-
ŀ			Benzo(b)fluoranthene	1.1E-007		3.7E-007	4.8E-007	Benzo(b)fluoranthene			-	_	l _
		1	Benzo(a)pyrene	7.4E-007	-	2.5E-006	3.2E-006	Benzo(a)pyrene	_	۱ ـ	_	١ ـ	l _
l.		.	Indeno(1,2,3-cd)pyrene	4.5E-008	-	1.5E-007	2.0E-007	Indeno(1,2,3-cd)pyrene	_		_		_
		1	Dibenzo(a,h)anthracene	8.6E-008		2.8E-007	3.7E-007	Dibenzo(a,h)anthracene		l _	_	l _	١ _
1			Aldrin	3.5E-008	_	8.8E-008	1.2E-007	Aldrin	l.lver	8.0E-004	_	2.0E-003	2.8E-003
ļ			Diekkrin	6.0E-008	l _	1.5E-007	2.1E-007	Dieldrin	Liver	8.9E-004	_	2.2E-003	3.1E-003
ļ,		1	Methoxychlor	-				Methoxychiar	Reproductive	1.2E-002	_	2.0E-002	4.1E-002
j		1	Aroclor-1248	3.5E-007	l _	1.2E-006	1.6E-006	Aroclor-1248	_		_		4.12-002
- 1]	Arodor-1260	2.6E-008	_	9.1E-008	1.2E-007	Arocior-1260	_				
			2,3,7,8-TCDD equiv.	2.4E-007	-	1.8E-007	4.2E-007	2,3,7,8-TCDD equiv.	_	Ī .			-
1		1	Artimony				4.25-007	Antimony	Whole body/blood	4.8E-003	_	1.2E-003	6.0E-003
ł		1	Arsenic	1.2E-005	-	9.5E-006	2.2E-005	Arsenic	Skin	7.3E-001	_	5.5E-001	1.3E+000
-1		1.	(Total)		·	1.5E-005	2.9E-005	(Total)	SMI	7.5E-001	····· -	5.5E-001	1.3E+000
Building	Building	AOC 2 - ADC	(1044)	1.40-003	ļ	1.02-003	2.86-003	(TOTAL)		7.36-001		3.36-001	1.357000
Materials	Materials	noc 2- noc	Benzo(a)anthracene	4.1E-008		1.4E-005	1.8E-005	Benzo(a)anthracene				1	1
NECON UNIO	Materials	1	Benzo(b)fluoranthene	5.2E-006	1	1.7E-005	2.2E-005	Benzo(b)fluoranthene	i -	-	-	_	-
l			1	1	-		1	1	_	-	-	_	1 -
- 1		1	Benzo(a)pyrene	4.1E-005 1.1E-006	-	1.4E-004 3.7E-006	1.8E-004	Benzo(a)pyrene	-	-	-	-	-
1		1	Indeno(1,2,3-cd)pyrene		}	1	4.8E-006	Indeno(1,2,3-cd)pyrene	-	-	-	-	-
· 1			Dibenzo(a,h)anthracene	3.4E-008	-	1.1E-005	1.4E-005	Dibenzo(a,h)anthracene			-		l
ł			Naphthalene	-	-	-	-	Naphthalene	Whole body	9.6E-004	-	3.1E-003	4.1E-003
· [į.	2-Methylnaphthalene	-	-	-	-	2-Methylnaphthalene	Whole body	3.3E-003		1.1E-002	1.4E-002
		1	Acenaphthene	-	-	-	-	Acenaphthene	Liver	9.0E-004	-	2.0E-003	3.4E-003
Į		1	Dibenzofuran	-	-	-	-	Dibenzofuran		1.5E-002	-	4.9E-002	6.4E-002
1		.1	Fluorene	-	-	-	-	Fluorene	Blood	2.4E-003		7.8E-003	1.0E-002
			Fluoranthene	-	- '	-	l -	Fluoranthene	Kidney/liver	5.9E-003	-	1.9E-002	2.5E-002
- 1			Pyréne	-	-	-	_	Pyrene	Kidney	5.6E-003	~	1.8E-002	2.4E-002
		-	Methoxychior	l -	-	-	-	Methoxychior	Reproductive	1.8E-003	-	4.5E-003	6.3E-003
i			Antimony	_	-	-	-	Antimony	Whole body/blood	8.6E-004	,	2.1E-007	0.6E-004
ļ		. [Arsenic	6.4E-007	ļ. -	4.9E-007	1.1E-008	Arsenic	Skón	1.7E-002	-	1.3E-002	3.0E-002
J		Ì	Copper	-	-	-	-	Copper	-	7.4E-004		1.9E-004	9.3E-004
3.4			Manganese	-	-	-	-	Manganese	-	1.2E-003	-	3.1E-004	1.5E-003
			Thellum	-	-	-	-	Thellum	Liver/blood	1.5E-003	-	3.9E-004	1.9E-003
		}	Zinc	L	ļ .	l	l	Zinc	Blood	6.1E-004	l	1.6E-004	7.8E-004
l		1	(Total)	5.5E-005		1.8E-004	2.4E-004	(Total)		5.7E-002	-	1.3E-001	1.9E-001
Surface Water	Surface Water	AOC 2 - ADC	1.		ľ		İ						
ŀ			Vinyl Chloride	4.8E-008	-	6.4E-008	5.4E-008	Vinyl Chloride	-	-	-	-	- 1
1		4	Antimony	-	-	-	<u> </u>	Antimony	Whole body/blood	7.2E-004	-	1.3E-005	7.3E-004
ŀ			Arsenic	1.8E-006	-	3.3E-008	1.8E-008	Arsenic	Skin	4.7E-002	-	8.6E-004	4.8E-002
]		<u> </u>	Manganese	-	-	-		Manganese	-	8.4E-004	-	1.5E-005	8.5E-004
į.		1	TheMum	l		l		Thellium	Liver/blood	9.9E-004		1.8E-005	1.0E-003
j			(Total)	1.8E-006	-	3.9E-008	1.9E-006	(Total)	I	4.9E-002	····-	9.0E-004	5.0E-002
ediment	Sediment	AOC 2 - ADC		T	1	1	l	1		1		1	1
		·	Benzo(a)pyrene	4:4E-007	-	5.4E-007	9.8E-007	Senzo(a)pyrene	-	-	-	-	-
ł			Methoxychlor	_	-	-	l -	Methoxychlor	Reproductive	1.5E-002	_	1.4E-002	2.9E-002
1		1	Arsenic	5.2E-005	-	1.5E-005	6.7E-005	Arsenic	Sidn	1.4E+000	-	3.8E-001	1.8E+000
			· • •	5.3E-005	1	1.6E-005	6.8E-005	(Total)	1	1.4E+000		4.0E-001	1.8E+000
													*

Total (Sidn) HI = 3.1E+000
Total (Ridney) HI = 4.9E-002
Total (Reproductive) HI = 7.8E-002

TABLE 9.1.CT SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCS CENTRAL TENDENCY EXPOSURE HORSESHOE ROAD COMPLEX SITE, SAYREVILLE, NEW JERSEY

Scenario Timeframe: Current and Future Receptor Population: Area Residents (Trespessers) Receptor Age: Youth (12-17 years)

Medium	Exposure Medium	Exposure Point	Chemical		Can	cinogenic Risi	k	Chemical		Non-Card	Inogenic Hazar	rd Quotient	
				Ingestion	inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermai	Exposure Routes Tota
oli .	Surface Soil	AOC 2 - ADC											
			ll.					Benzo(a)anthracene	-	-	-	· =	-
		ł		1				Benzo(b)fluoranthene	-	-	-	-	-
			1					Benzo(a)pyrene	. -	-	-	-	-
			1	1	l			Indeno(1,2,3-cd)pyrene	-	-	-	-	-
				1				Dibenzo(a,h)anthracene	· -		-	-	-
			1	1	ŀ			Aldrin	Liver	2.3E-004	-	5.7E-004	8.0E-004
								Dieldrin	Liver	2.4E-004	-	6.0E-004	8.4E-004
]		1				Methoxychiar	Reproductive	8.7E-004] -	2.2E-003	3.1E-003
		ŀ	1		1			Aroclor-1248	-	-	-	-	
		İ		1	İ	1		Aroclor-1260	-	-	-	-	-
	}	1	1	ì	1			2,3,7,8-TCDD equiv.	-	-	-	-	-
	ľ			1				Antimony	Whole body/blood	4.1E-004	-	1.0E-004	5.1E-004
	ļ.			1				Arsenic	Skin	9.2E-003		6.9E-003	1.6E-002
		<u> </u>							<u></u>	1.1E-002	-	1.0E-002	2.1E-002
iliding	Building	AOC 2 - ADC	1										
iterials	Materials		Benzo(a)anthracene	8.9E-007	-	5.8E-006	6.7E-006		-				
	1		Benzo(b)fluorenthene	1.0E-006	-	6.7E-006	7.7E-006		}		1		
		•	Benzo(a)pyrene	8.1E-006	-	5.3E-005	6.1E-005		1				
	Į.		Indeno(1,2,3-cd)pyrene	2.8E-007	-	1.8E-006	2.1E-006	1	İ		!	1	
	Į.	į.	Dibenzo(a,h)anthracene	8.1E-007	-	5.2E-006	6.0E-006			1	1	l i	· ·
			Naphthalene	-	-	-	_		1				
			2-Methylnaphthalene	-	-	-	-	1 .	1	1			
	<u> </u>	į	Acenephthene	-	-	-			ŀ				
		į	Dibenzofuren	-	-	-	-						
	'		Fluorene	-	-	-	-				ł		
			Fluoranthene	-	-	-	_					1	
		}	Pyrene	-	-	-	_		1]		}	
			Methoxychior	-	-	-	-		İ				
		<u> </u> :	Antimony	_	-	- i	-						
	<u> </u>		Arsenic	1.8E-010	_	2.7E-007	2.7E-007			1		1	<u> </u>
		İ '	Copper	-	_	- 1				İ			İ
		<u>}</u>	Mangenese	_	-	-					ļ	1	
			Theilum	-	_	_	_			1			
			Zinc	-	-	_	_			ł	1		·
			(Total)	1.1E-005		7.2E-005	8.3E-005	1					
diment	Sediment	AOC 2 - ADC		1									
								Benzo(a)pyrene	-	-	_	_	_
	1							Methoxychlor	Reproductive	1.4E-003	_	1.2E-003	2.6E-003
	1		ll.	1		<u> </u>		Arsenic	Sidn	2.7E-001	-	7.4E-002	3.4E-001
	1	1	II	1	·	1.		(Tota		2.7E-001		7.5E-002	3.4E-001

TABLE 9.1 RME SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPC® REASONABLE MAXIMAM EXPOSURE HORSESHOE ROAD COMPLEX SITE, SAVREVILLE, NEW JERSEY

Scenerio Tirreframe: Current and Future Receptor Population: Area Residente (Trespessora Receptor Age: Youth (12-17 years)

Medium	Exposure Medium	Exposure Point	Chemical	ļ	Carc	Inogenic Risi		Chemical		Non-Care	nogenie Hazar	d Quotient	
				Ingestion	Inhelation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inheletion	Cermal	Exposure Routes Tot
•	Surface Soil	AOC 3 - SPD		u sa ingrapositiris.	n mach	and annual en	The control of the co	And the manufacture of the stat		are transmission of	r T. Frir wr.pr.	THE PERSON NAMED IN	TARRET THE TREE SECTION
			Benzo(a)enthracene	6.3E-009	l -	2.1E-008	2.7E-008	Benzo(s)enthracene		_	-	_ `	-
		İ	Benzo(b)fluorenthene	1.1E-008	-	3.6E-008	4.7E-008	Beruzo(b)Ruonenthene		-	-		_
			Benzo(a)pyrene	5.5E-008	-	1.8E-007	2.4E-007	Велго(в)ругеле		l -	_	-	_
		İ	Indeno(1,2,3-cd)pyrane	4.8E-009	- 1	1.6E-008	2.1E-008	Indeno(1,2,3-cd)pyrene		-	_	_	
			Methoxychlor	1 -	۱	-	.	Methacychlar		7.8E-003	_	2.0E-002	2.8E-002
		1	Aluminum	-	-	- 1	-	Aluminum		6.1E-004	-	1.3E-004	6.4E-004
			Antimony	-	-	- 1	-	Antimony		2.6E-003	_	8.4E-004	3.2E-003
		· ·	Arsonic	1.8E-007	_	1.4E-007	3.2E-007	Arsenic		4.8E-003	_	3.6E-003	8.4E-003
	*	\	Copper	-	-	_	_	Copper		2.3E-003	-	5.7E-004	2.9E-003
	-		Manganese	1 _	-		_	Mengenese		5.4E-004	_	1.3E-004	8.7E-004
		1	Thellium	1		_	_	Thellum		7.9E-004	_	2.0E-004	9.9E-004
			Venedium	_	l _	_	_	Variedium		3.2E-004	_	7.9E-005	4.0E-004
			9	2.6E-007	····- <u>·</u>	3.9E-007	6.5E-007	(Total)		2.0E-002		2.6E-002	4.4E-002
face Water	Surface Water	AOC 5 - SPD		.,		0.00		1		2.00.002		2.06.002	77200
		1	Methoxychlor	_	_		_	Methorychior		6.5E-008	_	1.7E-008	7.2E-008
		į.	Aluminum				_	Akuminum		7.8E-008		1.4E-006	7.9E-005
		1	Arsenic	3.9E-008	-	7.0E-010	3.9E-008	Arsenic		9.9E-004	_	1.8E-005	1.0E-003
		1	Copper	3.02.000	_	7.02-010	3.02-000	Copper		1.9E-004		3.4E-008	1.8E-004
		1	Menganese	. -	-	-	-	Manganese		1.1E-003	•	2.1E-006	
		}	Vanedium	1 -	-	- 1	_	Vanadium		3.2E-005	-	6.8E-007	1.1E-003 3.3E-006
		1		3.9E-008	····-	705040	3.9E-008	Varnoum (Total)		2.4E-003	· · · · · · · · · · · · · · · · · · ·		3.3E-000 2.5E-003
dment	Sediment	AOC 3 - SPD	(100	3.82-000		7.0E-010	3.85-006	(1000)		ZAE-003		4.6E-006	2.08-003
ATTRICK.	OGURNAR	ACC 3- SPU	Benzo(b)Augranthene	8.8E-009	_ ا	8.1E-009	1.5E-008	Benzo(b)fluoranthene				ŀ	
				4.8E-008	1 .	6.6E-009	1.0E-007	1 ''		-	-	-	-
			Berizo(a)pyrene		-			Benzo(s)pyrane		-		-	
		<u> </u>	Dibenzo(a,h)enthracens	9.5E-009	-	1.2E-008	2.2E-008	Diberizo(e,h)enthracene			-	-	
		ł	Aroclor 1254	1.4E-009	-	1.8E-009		Aroclor 1254		4.1E-004	-	6.2E-004	9.3E-004
			l-leptechlor	9.9E-009	-	9.3E-009		Heptachior		5.3E-006	-	4.8E-006	1.0E-004
		1	Methaxychlar	-	-	-	-	Methoxychior		3.1E-003	-	2.0E-003	6.0E-003
		-	Aluminum	-	-	-	-	Aluminum		1.6E-006	-	1.6E-004	1.6E-004
	!	}	Antimony	-	-	- 1	-	Antimony		6.9E-004	-	6.3E-006	7.6E-004
		1 .	Arsenic	1.5E-007	-	4.1E-008	1.9E-007	Arsenic		8.7E-003	-	2.4E-003	1.1E-002
			Copper	-	-	-	-	Copper		2.4E-003		2.2E-004	2.6E-003
		[Manganese	-	ļ. -		-	Mangenese		1.4E-003	-	1.3E-004	1.5E-003
1		1	Venedium	l -	l -	l	.	Vanedium		8.2E-004	.	7.6E-006	9.0E-004
i		1	(Total	a) 2.2E-007	-	1.3E-007	3.5E-007	(Total)		1.0E-002	_	6.6E-003	2.4E-002

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TABLE 9.1.RME SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPC® REASONABLE MAXIMUM EXPOSURE HORSESHOE ROAD COMPLEX SITE, SAYREVILLE, NEW JERSEY

Scenario Timelhame: Current and Future Receptor Population: Area Residents (Treepassers Receptor Age: Youth (12-17 years)

Medium	Exposure Medium	Exposure Point	Chemical		Can	cinogenic Risi		Chemical		Non-Caro	inogenic Hazar	d Quotlent	
. 1		1	1	Ingestion	Inhalation	Dermal	Exposure	1	Primary	ingestion	Inheletion	Dermei	Exposure
I			2				Routes Total	1	Target Organ		1		Routes Tota
ol	Surface Soil	AOC 4 - ARC		to the second	T	The second second	en en en en en en en en en en en en en e				THE SHARE PERSON		r since arrive in t
ļ		1	Benzo(b)fluoranthene	9.7E-009	٠.	3.2E-000	4.2E-008	Beazo(b)fluoranthene	-	_	-	ا	_
ŀ			Benzo(a)pyrene	6.7E-008	-	2.2E-007	2.9E-007	Benzo(a)pyrene	_		_	l _	
			Hexachlorobutadione	2.7E-009	-	6.9E-009	9.6E-009	Hexachiorobutadiene	Kidney	2.0E-003	_	5.1E-003	7.1E-003
l			Hexachlorocyclopentadiene	_		_		Hexachlorocyclopentadiene	Stomach	4.9E-004	_	1.2E-003	1.7E-003
			Aldrin	1.9E-009	_	4.9E-009	6.8E-009	Aldrin	Liver	4.4E-005		1.1E-004	1.5E-004
- 1			Arocior-1248	9.1E-009	l _	3.2E-008	4.1E-008	Aroclor-1248	_	_		_	_
1		1	Aroclor-1254	2.0E-000		7.1E-008	9.1E-008	Arocior-1264	Immune	5.6E-003	_	2.0E-002	2.6E-002
1		1	Aroclor-1260	4.7E-009	l -	1.7E-008	2.2E-008	Aroclor-1200			_	_	
			2,3,7,8-TCDD equiv.	1.5E-007	_	1.2E-007	2.75-007	2,3,7,8-TCDD equiv.	_	_		1 -	_
l l		.]	Aluminum		_			Akuminum		9.3E-004		2.3E-004	1.2E-003
- 1			Antimony	1 _	_		_	Antimony	Whole body/blood	2.7E-003	_	8.8E-004	3.4E-003
- 1			Arsenic	2.1E-007	_	1.6E-007	3.7E-007	Arsenic	Skin	5.4E-003	_	4.1E-003	9.5E-003
		1	Cadmium		1	-	-	Cadmium	Kidney	2.2E-003	-	5.6E-005	2.3E-003
ļ			Copper	1 _	-	_	_	Copper		8.9E-004]	2.2E-004	1.1E-003
1			Manganese	-	l _	_	_	Manganese	1 _	1.2E-003	-	2.9E-004	1.5E-003
ĺ			Nickel				_	Nickel	Body organs	8.9E-004		2.2E-004	1.1E-003
			Silver	_			_	Silver	Sidn	3.4E-003	l <u> </u>	8.6E-004	4.3E-003
.			Theillum		-			Thallium	Liver/blood	6.2E-004	-	1.5E-004	7.7E-004
ŀ			Zinc		_			Zinc	Blood	1.8E-003	"	4.6E-004	2.3E-003
i			(Tota	d) 4.7E-007	····	6.6E-007	1.1E-006		(Total)	2.8E-002	ļ 	3.4E-002	6.3E-002
uilding	Building	AOC 4 - ARC		7.72.707	<u> </u>	0.02-007	7.12-000	ł	(1000)	2.02-002		3.46-002	0.35-002
laterials	Materials	7.004-7.10	Aroclor-1254	3.1E-007	_	1.1E-006	1.4E-006	Aroclor-1254	Immune	9.0E-002		3.2E-001	4.1E-001
	Materials		2,3,7,8-TCDD equiv.	1.3E-005	_	9.9E-006	2.3E-005	2,3,7,8-TCDD equiv.	WATER	9.UE-002		3.26-001	4.12-001
i			Artimony	1.3E-003	1 -	B.8E-000	2.35-005	Antimony	Whole body/blood	4.8E+000	_	1.2E+000	6.0E+000
}			Arsenic	1.9E-008	-	1.5E-006	3.4E-006	Arsenic	Sidn	5.1E-002	-	3.8E-002	9.9E-002
1		1	(Total			1.3E-005	2.8E-005	Armenic		4.9E+000	ļ .		
urface Water	Ot 101sts-	AOC 4 - ARC	Antimony		ļ .		2,05-000	Antimony	(Total)	6.9E-003		1.5E+000	6.4E+000
IN HIGH AARTON	Surface Water	ACC 4-ARC	Arsenic	5.1E-008	-	9.2E-010	5.2E-008	Arrenic	Whole body/blood Skin	1.3E-003	-	1.3E-004	7.0E-003
- 1			Cudmium		-	1	5.20-008	Cadmium		1	-	2.4E-006	1.3E-003
- 1					-	-	_	1	Kidney	5.1E-004	-	9.4E-006	5.2E-004
			Copper	-	-	-	_	Copper	-	9.2E-004	-	1.7E-005	9.4E-004
1			Mangunese Nickei	1 -	-	-	_	Manganese Nickei	-	9.1E-004 1.9E-004	-	1.7E-005	9.3E-004
ì			Silver	-	-	_	_	Silver	Body organs Skin	2.3E-004	-	3.5E-007 2.5E-008	1.9E-004 2.3E-004
			8 ***	i) 5.1E-008	ļ 		5.2E-008	(Total	.1	1.1E-002	} -		
		AOC 4 - ARC	(180	1) 5.1E-100		9.2E-010	3.20-000	(1004)	4	1.16-002		2.0E-004	1.1E-002
ediment	Sediment	ACC 4 - ARC	Barrada Income	7.3E-000		8.9E-008	1.6E-007	Banan/a\massa			ļ		
			Benzo(a)pyrene Dieldrin					Bertzo(a)pyrene	13	-	_	7	-
. [Arocior-124B	6.6E-009	-	6.2E-009	1.3E-008	Dieldrin	Liver	-	-	-	ļ
		1		4.2E-008	-	5.5E-008	9,7E-008	Arodor-1248		-	-	-	7.05.55
1			Aroclor-1254	1.2E-006	-	1.5E-006	2.7E-006	Aroclor-1254	Immune	3.5E-001	-	4.4E-001	7.9E-001
		1	Arocior-1260	4.2E-008	-	5.5E-008	9.7E-008	Aroclor-1260	_	-	-		_
ì		1	2,3,7,8-TCDD equiv.	1.2E-007	-	3.4E-008	1.5E-007	2,3,7,8-TCDD equiv.			-		
			Antimony		-	-		Antimony	Whole body/blood	7.8E-003	-	7.2E-004	8.5E-003
		1	Arsenic	7.4E-007	-	2.1E-007	9.5E-007	Arsenic	Skin	2.0E-002		5.4E-003	2:5E-002
		.}	Copper	-	-	-	-	Copper		4.5E-003	-	4.1E-004	4.9E-003
-		1	Silver	J	ļ 		<u></u>	Silver	Sidn	7.7E-003	ļ .	7.1E-004	8.4E-003
			(Tota	il) 2.2E-006	<u> </u>	2.0E-006	4.1E-006	(Total	· L	3.0E-001	L	4.5E-001	8.3E-001
					Total Risk A	cross[Media]	i	1	Total Hazard Index A	cross All Me	dia and All Exp	osure Routes	7.3E+000

Total [Sidn] HI = 1.4E-001 hole Body/blood] HI = 6.0E+000 Total [Immune] HI = 1.2E+000

TABLE 9.1.CT SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCS CENTRAL TENDENCY EXPOSURE HORSESHOE ROAD COMPLEX SITE, SAYREVILLE, NEW JERSEY

Scenario Timeframe: Current and Future Receptor Population: Area Residents (Trespassera Receptor Age: Youth (12-17 years)

Medium	Exposure Medium	Exposure Point	Chemical		Carci	inogenic Risi		Chemical			nogenic Hazar		
				Ingestion	Inhalation	Dermai	Exposure		Primary	Ingestion	Inhalation	Dermal	Exposure
				<u> </u>			Routes Total		Target Organ				Routes Total
Building .	Building	AOC 4 - ARC	Section 5 and Washington Company and Asset & Ving			1							
Materials	Materials		*					Aroclor-1254	Immune	8.4E-003		5.9E-002	6.7E-002
								2,3,7,8-TCDD equiv.	-	-		,	_
								Antimony	Whole body/blood	6.8E-001	-	3.4E-001	1.0E+000
								Arsenic	Skin	1.6E-002		2.3E-002	3.9E-002
									(Total)	7.0E-001	_	4.2E-001	1.1E+000

TABLE 9.1.RME SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPC® REASONABLE MAXIMUM EXPOSURE HORSESHOE ROAD COMPLEX SITE, SAYREVILLE, NEW JERSEY

Scenario Timetrame: Current and Future Receptor Population: Area Revidents Receptor Age: Youth (12-17 years)

Medium	Exposure	Exposure	Chemical		Carc	inogenic Risi	k	Chemical		Non-Care	Inogenic Hazar	d Quotient	
	Medium	Point	į.	l			•	1					
		1		Ingestion	inhalation	Dermai	Exposure	1	Primery	Ingestion	Inhalation	Dermal	Exposure
urface Water	Surface Water	AOC 5 - DSM	20 NO. 100 NO. 100 NO. 100 NO. 100 NO. 100 NO. 100 NO. 100 NO. 100 NO. 100 NO. 100 NO. 100 NO. 100 NO. 100 NO.							1			1
			Arsenic	2.2E-006	-	4.0E-008	2.3E-006	Arsenic	Skin	6.7E-002	-	1.0E-003	5.8E-002
ľ			Manganese	l -	-	-	l .	Manganese	_	1.5E-003	-	2.7E-005	1.5E-003
ſ		i	(Total)	2.2E-008	-	4.0E-008	2.3E-006	(Total)		5.8E-002		1.1E-003	5.9E-002
ediment	Sediment	AOC 5 - DSM											
- 1			Benzo(a)anthracene	2.2E-009	-	2.7E-009	4.9E-009	Benzo(a)snthracene	-	-	-	-	-
1			Benzo(b)fluoranthene	5.3E-009	-	6.5E-009	1.2E-008	Benzo(b)fluoranthene	-	-	-		-
1			Benzo(a)pyrene	2.2E-008	-	2.7E-008	4.9E-008	Benzo(a)pyrene		_	-	-	-
1		ŀ	Indeno(1,2,3-cd)pyrene	1.6E-009	-	2.0E-009	3.6E-009	Indeno(1,2,3-cd)pyrene	_	-	-	-	-
			Aroclor-1254	9.4E-009	-	1.2E-008	2.1E-008	Arodor-1254	immune	2.8E-003	-	3.6E-003	6.4E-003
- 1			Arsenic	6.0E-005		1.7E-005	7.7E-005	Arsenic	Skin	1.6E+000	-	4.4E-001	2.0E+000
1			(Total)	6.4E-005		1.7E-005	8.1E-005	(Total)		1.6E+000		4.5E-001	2,1E+000

Total (Sidn) HI = 2.1E+000 Total (Immune) HI = 8.4E-003

TABLE 9.1.CT SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs CENTRAL TENDENCY EXPOSURE HORSESHOE ROAD COMPLEX SITE, SAYREVILLE, NEW JERSEY

Scenario Timeframe: Current and Future Receptor Population: Area Residents Receptor Age: Youth (12-17 years)

Medium	Exposure Medium	Exposure Point	Chemical			inogenic Ris	k	Chemical			nogenic Hazar		
				Ingestion	inhalation	Dermai	Exposure		Primery	Ingestion	inhalation	Dermai	Exposure
							Routes Total		Target Organ	J			
Sediment	Sediment	AOC 5 - DSM			Ī						and the second second second second		
								Benzo(a)anthracene	-	-	-	-	-
								Benzo(b)fluoranthene		-	-		-
					Ì			Benzo(a)pyrene	-	-	_	-	_
	·							Indeno(1,2,3-cd)pyrene	-	-	-	-	. –
								Arodor-1254	Immune	2.3E-003	_	3.0E-003	5.3E-003
			•					Arsenic	Sidn	7.7E-001		2.1E-001	9.7E-001
ı l		[[(Total)		7.7E-001		2.1E-001	9.8E-001

TABLE 9.1.RME SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPC® REASONABLE MAXIMUM EXPOSURE HORSESHOE ROAD COMPLEX SITE, SAYREVILLE, NEW JERSEY

Scenario Timetame: Current and Future Receptor Population: Area Residente Receptor Age: Youth (12-17 years)

Medium	Exposure Medium	Exposure Point	Chemical			Card	inogenic Risi	t	Chemical			Non-Care	inogenic Hazan	d Quotient	
			1	, ii	ngestion	Inhalation	Dermal	Exposure			Primary	Ingestion	inhalation	Dermal	Exposure
		_1	<u> </u>					Routes Total			Target Organ				Routes Tota
Surface Water	Surface Water	AOC 6 - RR	1							# 14 MILES		~~~			
į.		1	Akmhum	- 1		- 1	-	_	Aluminum		-	6.9E-005	-	1.3E-006	7.0E-005
		1	Antimony		-		-	_	Antimony		Whole body/blood	4.3E-004	-	7.8E-006	4.4E-004
- 1		1	Arsenic	7.	.8E-008	_	1.4E-009	7.9E-008	Arsenic		Skin	2.0E-003	-	3.7E-005	2.0E-003
l l		l .	Copper	- 1	- 1	-	-		Copper		-	1.9E-004	-	3.4E-006	1.96-004
1			Manganese	- 1	-		-		Manganese		-	1.3E-004	-	2.3E-006	1.3E-004
i		1	Thellum		-	-	-	-	Thaillium		Liver/blood	2.1E-003	-	3.9E-006	2.1E-003
			Vanadium	l		-	-		Vanadium		None	8.0E-005	-	1.5E-006	8.2E-005
1				(Total) 7	8E-008	-	1.4E-009	7.9E-008		(Total)		5.0E-003		9.2E-005	5.1E-003
Sediment	Sediment	AOC 6 - RR													
1		(Arsenic	3.	3E-005	-	9.3E-008	4.26-005	Arvenic		Skin	8.8E-001	-	2.4E-001	1.1E+000
.		}	Copper	- 1	-		-		Copper		-	1.1E-002		9.8E-004	1.2E-002
1			1 ((Total) 3	3E-005	-	9.3E-006	4.2E-005	1	(Total)		8.9E-001		2.4E-001	1.1E+000

Total [Skin] HI = 1.1E+000

Total [Liver/blood] HI = 2.1E.003

Total [Whole body/blood] HI = 4.4E-004

TABLE 9.1.CT SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCS CENTRAL TENDENCY EXPOSURE HORSESHOE ROAD COMPLEX SITE, SAYREVILLE, NEW JERSEY

Scenario Timeframe: Current and Future Receptor Population: Area Residents Receptor Age: Youth (12-17 years)

Medium	Exposure Medium	Exposure Point	Chemical		Card	nogenic Risi	(Chemical	-	Non-Card	nogenic Hazar		
1				Ingestion	Inhelation		Exposure		Primary	Ingestion	Inhalation	Dermai	Exposure
i l i							Routes Total		Target Organ				Routes Total
Sediment	Sediment	AOC 6 - RR									***************************************		
							-	Arsenic	Skin	1.8E-001	-	4.5E-002	2.3E-001
		·						Copper		4.7E-003		4.3E-004	5.1E-003
								(Total)		1.8E-001	-	4.5E-002	2.3E-001

TABLE 9.2a.RME SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCS REASONABLE MAXIMUM EXPOSURE HORSESHOE ROAD COMPLEX SITE, SAYREVILLE, NEW JERSEY

Scenario Timeframe: Current and Future Receptor Population: Residents Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical		Card	inogenic Ris		Chemical		Non-Carci	nogenic Hazar	rd Quotient	
				Ingestion	Inhalation	Dermal	Exposure		Primary	Ingestion	inhalation	Dermal	Exposure
urface Water	Shellfish	AOC 5 - DSM											1
l			Arsenic	1.2E-008	_	-	1.2E-008	Arsenic	Skin	7.4E-006		-	7.4E-006
			Manganese		-	-	-	Manganese	_	2.6E-006		1 - '	2.6E-006
			(Total)	1.2E-008	-	-	1.2E-008	(Total)		1.0E-005	-	_	1,0E-005
urface Water	Surface Water	AOC 5 - DSM											
]			Arsenic	3.5E-005	-	1.6E-005	5.1E-005	Arsenic	Skin	2.3E-001		1.1E-001	3.4E-001
-			Manganese			-		Manganese		6.0E-003	-	2.8E-003	8.8E-003
İ			(Total)	3.5E-005	-	1.6E-005	5.1E-005	(Total)		2.3E-001	-	1.1E-001	3.4E-001
ediment	Sediment	AOC 5 - DSM											
			Benzo(a)anthracene	7.0E-009	-	2.3E-008	3.0E-008	Benzo(a)anthracene		-	+	-	-
			Benzo(b)fluoranthene	1.7E-008		5.6E-008	7.3E-008	Benzo(b)fluoranthene		-		-	- '
		1	Benzo(a)pyrene	7.0E-008	-	2.3E-007	3.0E-007	Benzo(a)pyrene	-	-		-	
			Indeno(1,2,3-cd)pyrene	5.1E-009	-	1.7E-008	2.2E-008	Indeno(1,2,3-cd)pyrene		_		_	
		Į.	Aroctor-1254	3.0E-008	-	1.1E-007	1.4E-007	Arodor-1254	Immune	2.2E-003		7.9E-003	1.0E-002
			Arsenic	1.9E-004		1.5E-004	3.4E-004	Arsenic	Skin	1.3E+000	-	9.7E-001	2.2E+000
			(Total)	1.9E-004	-	1.5E-004	3.4E-004	(Total)		1.3E+000	_	9.7E-001	2.2E+000
	THE RESERVE OF THE PARTY OF THE				Total Risk Ac	ross(Media)		T	otal Hazard Index	Across All Med	tia and All Expo	osure Routes	2.6E+000
			Total Risk Acros	s All Media a	nd All Expos	ure Routes	3.9E-004	îl				,	

Total [Skin] Hi =

2.6E+000 1.0E-002

400385

TABLE 9.2a.CT SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCS CENTRAL TENDENCY EXPOSURE HORSESHOE ROAD COMPLEX SITE, SAYRÉVILLE, NEW JERSEY

Scenario Timeframe: Current and Future Receptor Population: Residents Receptor Age: Adult

Medium	Exposute Medium	Exposure Point	Chemical		Caro	inogenic Ris	k	Chemical			nogenic Hazar	d Quotient	
				Ingestion	Inhalation	Dermal	Exposure		Primary	Ingestion	Inhalation	Dermal	Exposure
				_ [Routes Total		Target Organ				
Sediment	Sediment	AOC 5 - DSM		T	1							2 m. h. days	
			Benżo(a)anthracene	2.6E-009	-	8.8E-009	1.1E-008	Benzo(a)anthracene	_	-	-		-
			Benzo(b)fluoranthene	3.6E-009	-	1.2E-008	1.6E-008	Benzo(b)fluoranthene	-	-	-	-	_
			Benzo(a)pyréne	2.6E-008	-	8.8E-008	1.1E-007	Benzo(a)pyrene		-	-	_	-
			Indeno(1,2,3-cd)pyrene	1.9E-009	-	6.5E-009	8.4E-009	Indeno(1,2,3-cd)pyrene		-		-	-
	[Arocior-1254	9.3E-009	-	3.4E-008	4.3E-008	Aroclor-1254	Immune	1.8E-003	-	6.5E-003	8.3E-003
			Arsenic	3.5E-005	_	2.7E-005		Arsenic	Skin	6.0E-001	_	4.6E-001	1.1E+000
			(Tota	n 3.5E-005	†····-	2.7E-005	6.1E-005	(Total)		6.0E-001		4.7E-001	1.1E+000

TABLE 9.2a.RME SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCS REASONABLE MAXIMUM EXPOSURE HORSESHOE ROAD COMPLEX SITE, SAYREVILLE, NEW JERSEY

Scenerio Timeframe: Current and Future Receptor Population: Residents Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical		Card	cinogenic Risi	k	Chemical		Non-Carci	nogenic Hazar	d Quotient	
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	ingestion	Inhalation	Dermal	Exposure Routes Tota
Surface Water	Shelfish	AOC 6 - RR		1									
			Akıminum	-	· -	-		Aluminum	_	-	-	-	**
. [Antimony	-	-	- 1		Antimony	Whole body/blood	1.3E-009			1.3E-009
			Arsenic	4.1E-010	-	- 1	4.1E-010	Arsenic	Skin	2.6E-007		_	2.6E-007
}			Copper	-	-	- '	<u>-</u> .	Copper		1.1E-007			1.1E-007
			Manganese	-		_		Manganese	-	2.2E-007			2.2E-007
			Thellium	-		_		Thallium	Liver/blood	2.2E-007			2.2E-007
I			Vanadium	-	-			Vanadium	None]			_
		1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	(Total	4.1E-010	-	-	4.1E-010	(Tot	ai)	8.1E-007	**	_	8.1E-007
rface Water	Surface Water	AOC 6 - RR				1							
I			Aluminum		-	-	-	Aluminum	-	2.8E-004		1.3E-004	4.1E-004
			Antimony	-	_	_		Antimony	Whole body/blood	1.7E-003	-	8.0E-004	2.5E-003
1			Arsenic	1.2E-006	-	5.7E-007	1.8E-006	Arsenic	Skin	8.0E-003		3.7E-003	1.2E-002
1			Copper	-	-	- 1		Соррег	_	7.5E-004	-	3.5E-004	1.1E-003
İ			Manganese	_				Manganese	-	5.1E-004		2.4E-004	7.5E-004
1		·	Thallium	-	_	-		Thallium	Liver/blood	8.6E-003	-	4.0E-003	1.3E-002
· •			Vanadium		-	-		Vanadium	None	3.2E-004	- '	1.5E-004	4.7E-004
			(Total	1.2E-006	-	5.7E-007	1.8E-006	(Tot	al)	2.0E-002		9.4E-003	3.0E-002
ediment	Sediment	AOC 6 - RR			[T	Ī			
. 1			Arsenic	1.1E-004	-	8.0E-005	1.9E-004	Arsenic	Skin	6.9E-001	-	5.3E-001	1.2E+000
j			Copper	-	_	-		Copper		8.4E-003		2.1E-003	1.0E-002
			(Total	1.1E-004		8.0E-005	1.9E-004	(Tat	ai)	7.0E-001		5.3E-001	1.2E+000
					Total Risk Ad	ross[Media]	[1	Total Hazard Index A	cross Al Med	ia and All Expo	sure Routes	1.3E+000

Total (Skin) HI = 1.2E+000

Total (Liver) HI = 1.3E-002

Total (Whole body) HI = 2.5E-003

TABLE 9.2a.CT SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs CENTRAL TENDENCY EXPOSURE HORSESHOE ROAD COMPLEX SITE, SAYREVILLE, NEW JERSEY

Scenario Timeframe: Current and Future Receptor Population: Residents Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical		Carc	inogenic Ris	k	Chemical		Non-Carci	nogenic Hazar	d Quotient	
1				Ingestion	Inhalation	Dermal	Exposure		Primary	Ingestion	Inhalation	Dermal	Exposure
]]	Routes Total	- the country's an experimental party of the countr	Target Organ	<u> </u>			Routes Total
Sediment	Sediment	AOC 6 - RR							l				
		į	Arsenic	8.1E-006	-	6.3E-006	1.4E-005	Arsenic	Skin	1.4E-001	-	1.1E-001	2.5E-001
			Copper	-			-	Copper	ļ -	3.7E-003		9.4E-004	4.6E-003
			(Total)	8.1E-006		6.3E-006	1.4E-005	(Total)		1.4E-001		1.1E-001	2.5E-001

TABLE 9.26 RME. SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs REASONABLE MAXIMUM EXPOSURE HORSESHOE ROAD COMPLEX SITE, SAYREVILLE, NEW JERSEY

Scenario Timeframe: Future Receptor Population: Residents Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical			Cerc	inogenic Ris	k .	Chemical		Non-Card	nogenic Hazar	d Quotient	
					Ingestion	Inhalation	Dermal	Exposure		Primary	Ingestion	Inhalation	Dermal	Exposure
Surface Water	Surface Water	AOC 5 - DSM												
ļ			Arsenic		4.2E-005	-	6.7E-006	4.8E-005	Arsenic	Skin	1.1E+000		1.7E-001	1.3E+000
1		1	Manganese	- 1			-		Manganese		2.8E-002		4.5E-003	3.3E-002
		İ	(Total)	4.2E-005	_	6.7E-006	4.8E-005	(Total)		1.1E+000	***	1.7E-001	1.3E+000
Sediment	Sediment	AOC 5 - DSM												
			Benzo(a)anthracene		1.6E-008	-	1.7E-008	3.3E-008	Benzo(a)anthracene	••	- 1		-	
			Benzo(b)fluorenthene	- 1	4.0E-008	-	4.2E-008	8.2E-008	Benzo(b)fluoranthene		-	-	_	-
		1	Benzo(a)pyrene	- 1	1.6E-007	-	1.7E-007	3.3E-007	Benzo(a)pyrene	- '	-		_	-
			Indeno(1,2,3-cd)pyrene	- 1	1.2E-008	-	1.3E-008	2.5E-008	Indeno(1,2,3-cd)pyrene	_	-	~	-	-
			Aroclor-1254	- 1	7.1E-008	_	7.9E-008	1:5E-007	Arodor-1254	Immune	2.1E-002	-	2.3E-002	4.4E-002
			Arsenic	.	4.5E-004	-	1.1E-004	5.6E-004	Arsenic	Skin	1.2E+001	-	2.8E+000	1.5E+001
				Total)	4.5E-004		1.1E-004	5.6E-004	(Total)		1.2E+001		2.8E+000	1.5E+001
						Total Risk Ad	ross[Media]		Ť	otal Hazard Index	Across Al Med	lia and All Expo	sure Routes	1.6E+001
			Total Risk	Across	All Media a	nd All Expos	ure Routes	6.1E-004]					

Total [Skin] HI = 1.6E+001

Total [Immune] HI = 4.4E-002

TABLE 9.2b.CT SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCS CENTRAL TENDENCY EXPOSURE HORSESHOE ROAD COMPLEX SITE, SAYREVILLE, NEW JERSEY

Scenario Timeframe: Future Receptor Population: Residents Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical			Carc	inogenic Ris	k	Chemical		Non-Carci	nogenic Hazar	d Quotient	
	-			- 1	Ingestion	Inhalation	Dermai	Exposure		Primary	Ingestion	Inhalation	Dermal	Exposure
				1				Routes Total						Routes Total
Sediment	Sediment	AOC 5 - DSM]							
le e	* *		Benzo(a)anthracene	- 1	1.6E-008	-	1.7E-008	3.3E-008	Benzo(a)anthracene	-	-		-	-
			Benzo(b)fluoranthene	- [2.2E-008	-	2.3E-008	4.5E-008	Benzo(b)fluoranthene	-	-	-	-	-
			Benzo(a)pyrene	i	1.6E-007	-	1.7E-007	3.3E-007	Benzo(a)pyrene	-	-	-	- 1	, -
			Indeno(1,2,3-cd)pyrene		1.2E-008	-	1.3E-008	2.5E-008	Indeno(1,2,3-cd)pyrene	-	-	-	_	-
· 1			Aroclor-1254	1	5.8E-008		6.5E-008	1.2E-007	Arocior-1254	immune	1.7E-002		1.9E-001	2.1E-001
			Arsenic		2.2E-004	-	5.2E-005	2.7E-004	Arsenic	Skin	5.6E+000	-	1.3E+000	6.8E+000
<u> </u>				(Total)	2.2E-004	-	5.2E-005	2.7E-004	(Total)		5.8E+000	-	1.4E+000	7.0E+000

TABLE 9.2b.RME SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs REASONABLE MAXIMUM EXPOSURE HORSESHOE ROAD COMPLEX SITE, SAYREVILLE, NEW JERSEY

Scenario Timeframe: Future Receptor Population: Residents Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical		Card	inogenic Ris	k	Chemical		Non-Carci	nogenic Hazai	d Quotient	
· j		1		Ingestion	Inhalation	Dermal	Exposure		Primary	Ingestion	Inhalation	Dermal	Exposure
					L		Routes Total		Target Organ				Routes Total
Surface Water	Surface Water	AOC 6 - RR			1						en e station en en en en en en en en en en en en en		
1			Aluminum	7*		-		Aluminum		2.8E-004	+-	1.3E-004	4.1E-004
			Antimony	-		-	••	Antimony	Whole body/blood	1.7E-003		8.0E-004	2.5E-003
			Arsenic	1.2E-006		5.7E-007	1.8E-006	Arsenic	Skin	8.0E-003	**	3.7E-003	1.2E-002
1		· .	Copper	-	-	- 1		Copper		7.5E-004	-	3.5E-004	1.1E-003
1			Manganese	-			-	Manganese	-	5.1E-004	-	2.4E-004	7.5E-004
I			Thellium		'		-	Thallium	Liver/blood	8.6E-003		4.0E-003	1.3E-002
.]			Vanadium		-	- 1	-	Vanadium	None	3.2E-004		1.5E-004	4.7E-004
			(Total)			5.7E-007	1.8E-006	(Total)		2.0E-002	-	9.4E-003	3.0E-002
Sediment	Sediment	AOC 6 - RR		1									
			Arsenic	2.5E-004	_	5.9E-005	3.1E-004	Arsenic	Skin	6.5E+000		1.5E+000	8.0E+000
			Copper	-			.	Copper	-	7.8E-002		6.2E-003	8.4E-002
			(Total)	2.5E-004		5.9E-005	3.1E-004	(Total)		6.6E+000	-	1.5E+000	8.1E+000
					Total Risk Ad	ross[Media]			otal Hazard Index A	cross All Med	ia and All Expo	sure Routes	8.1E+000

Total (Skin) HI = 8.0E+000

Total (Liver) HI = 1.3E-002

Total (Whole body) HI = 2.5E-003

TABLE 9.2b.CT SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs CENTRAL TENDENCY EXPOSURE HORSESHOE ROAD COMPLEX SITE, SAYREVILLE, NEW JERSEY

Scenario Timeframe: Future Receptor Population: Residents Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical		Carc	inogenic Ris	k	Chemical		Non-Carcir	nogenic Hazar	d Quotient	
]				Ingestion	Inhalation	Dermal	Exposure		Primary	Ingestion	Inhalation	Dermal	Exposure
ll						[Routes Total		Target Organ	l			Routes Total
Sediment	Sediment	AOC 8 - RR						5 - 54 - 7 - 7 - 7 - 7 - 7 - 7 - 7 - 7 - 7 -		1			
			Arsenic	5.1E-005	-	1.2E-005	6.3E-005	Arsenic	Skin	1.3E+000	· -	3.2E-001	1.7E+000
	·		Copper	-	. –	-	_	Соррег	-	3.5E-002	-	2.8E-003	3.8E-002
ll			(Total)	5.1E-005	_	1.2E-005	6.3E-005	(Total)		1.4E+000	-	3.2E-001	1.7E+000

TABLE 9.3.RME

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCS

REASONABLE MAXIMUM EXPOSURE

HORSESHOE ROAD COMPLEX SITE, SAYREVILLE, NEW JERSEY

Scenario Timeframe: Future Receptor Population: Site Workers Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical		Can	dnogenic Ris	k .	Chemical		Non-Carc	nogenic Hazas	d Quotient	
				Ingestion	}	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Tota
Al .	Surface Soil	AOC 1 - HRDD		r. ("/= ": + n =:	1	1		1		1	THE PROPERTY		
	İ		Dieldrin	3.5E-007	-	3.8E-006	4.2E-006	Diektrin	Liver	1.2E-003	-	1.4E-002	1.5E-002
	1		Aroclor-1248	3.4E-006	-	5.3E-005	5.6E-005	Arocior-1248	-	-	-	-	
		1	Arocior-1254	3.1E-007	-	4.8E-008	5.1E-006	Aroclor-1254	fmmune	2.1E-002	-	3.4E-001	3.6E-001
)		Aroclor-1280	2.8E-007	-	4.0E-006	4.3E-006	Aroclor-1260	-	-	-	- '	-
	I		Akuminum	-	-	-	-	Aluminum	÷	7.0E-003	-	8.1E-003	1.5E-002
	Ì		Antimony	-	-	-		Antimony	Whole body/bloor	4.2E-003	-	4.8E-003	9.0E-003
			Arsenic	1.4E-005	-	4.8E-005	6.2E-005	Arsenic	Skin	8.7E-002	-	3.0E-001	3.9E-001
	1	1	Cadmium	i -	i -	j - i	-	Cadmium	Kidney	2.2E-003	-	2.6E-004	2.5E-003
			Copper	-	-	-		Copper	-	5.3E-003	-	6.2E-003	1.2E-002
		1	Manganese	-	-	-	-	Manganese	.] -	8.6E-003	-	1.0E-002	1.9E-002
			Nickel	-	-	-	_	Nickel	Body Organs	2.6E-003	-	3.1E-003	5.7E-003
		1	Silver	-	-	- 1	-	Silver	Skin	2.9E-003	-	3.4E-003	6.3E-003
			Thellum	-	-	-	-	Thailum	Liver/blood	7.0E-003	-	8.1E-003	1.5E-002
	1		Vanadum	ļ -		1		Vensdium	None	4.5E-003		5.2E-003	9.7E-003
t	l		(Tota	i) 1.9E-005	-	1.1E-004	1.3E-004	<u> </u>	(Total)	1.5E-001		7.0E-001	8.6E-001
H	Subsurface Soll	AOC 1 - HRDD	1	1				1	Ì	1			Ì
].		Arocior-1248	4.7E-007	-	7.3E-006	7.8E-006	Arocior-1248	-	I	-	-	-
	1)	Aroclor-1254	3.5E-008	-	5.4E-007	5.8E-007	Arodor-1254	kmmune	2.4E-003	-	3.8E-002	4.0E-002
		ł	Aroclor-1260	1.1E-006	-	1.7E-005	1.8E-005	Arodor-1260	-	-	-	-	
]	Aluminum	-	-	-	_	Aluminum	· · · · · · · · · · · · · · · · · · ·	5.2E-003	-	6.1E-003	1.1E-002
			Antimony		-		_	Antimony	Whole body/blood	1	-	7.3E-003	1.4E-002
	1		Arsenic	6.6E-008	-	2.2E-005	2.9E-005	Arsenic	Sidn	4.0E-002	-	1.4E-001	1.8E-001
		ĺ	Cadmium	-	-	-	- -	Cadmium	Kidney	2.2E-003	-	2.5E-004	2.5E-003
		<u> </u> -	Copper	-	-	_	-	Copper	-	1.5E-002	-	1.7E-002	3.2E-002
			Manganese Nickel	-	_	-	· 	Manganese	-	9.9E-003	-	1.25-002	2.2E-002
	1	1	Thelium	-	-	- 1	-	Nickel	Body Organs	4.3E-003	-	5.0E-003	9.3E-003
			1	-	-	-	-	Thaillum	Liver/blood	1.8E-002	-	2.0E-002	3.8E-002
		1	Vanadum				5.5E-005	Vanadum	None	3.5E-003 1.1E-001	} 	4.1E-003	7.8E-003
	Test Pit Soli	AOC 1 - HRDD	(Tota	ii) 8.2E-006		4.7E-005	3.35-003		(Total)	1.16-001	====	2.5E-001	3.6E-001
	1 TORK PR SOR	ACC 1-MICO	Benzo(a)pyrene	1.8E-006		2.60E-005	2.8E-005	Benzo(a)pyrene	ŀ			}	
		i -	Aroctor-1248	1.5E-006		2.30E-004	2.5E-005	Arocior-1248	-	1 -	i -	_	-
	j		Arocior-1254	2.2E-006		3.50E-005	3.7E-005	Aroclor-1254	fmmune	1.5E-001	_	2.5E+000	2.7E+000
	Ì		Antimony	2.22-000	1	3.50E-005	3.72-003	Antimony	1		1 -		
		İ	Arsenic	1.9E-004		6.40E-004	8.3E-004	Arsenic	Whole body/bloo	1.0E+000	l -	1.9E+000 4.0E+000	3.5E+000 5.2E+000
		l	11	D 2.1E-004	····· <u>-</u>	9.3E-004	1.1E-003	• 1	(Total)	2.9E+000	····	8.4E+000	1.1E+001
					Total Risk A				Total Hazard Index		l	day	1.3E+001
		_	Total Risk Acro				1.3E-003	1	TOTAL PROPERTY STORY	JAN AND BELLING	aa aan ra Siy	THE WILLIAM TOTAL	1.327001
							tage of 10% differen	-41			To	tal (Sidn) Hi =	5.8E+000
												(mmune) Hi =	3.1E+000

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TABLE 9.3.CT SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs CENTRAL TENDENCY EXPOSURE HORSESHOE ROAD COMPLEX SITE, SAYREVILLE, NEW JERSEY

Scenario Timeframe: Future Receptor Population: Site Workers Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical		Card	dnogenic Ris	k	Chemical		Non-Card	nogenic Hazar	d Quotient	
				Ingestion	Inheletion	Dermel	Exposure	1	Primary	Ingestion	inhelation	Dermal	Exposure
	<u> </u>						Routes Total		Target Organ				Routes Tota
oil	Surface Soll	AOC 1 - HRDD		1	1	1							
	1	1	Dieldrin	8.8E-009	-	1.8E-007	1.9E-007	1	ì				
			Arodor-1248	7.7E-008	-	2.2E-006	2.3E-006	1					
	1		Arodor-1254	1.8E-006	-	5.2E-007	2.3E-006	ì	.1				
			Arodor-1260	9.5E-009	-	2.7E-007	2.8E-007	1	` .				
	Į	Ì	Aluminum	1 -	-	i -	_	1]			İ
			Artimony.	-	-	-	-	l					
			Arseric	1.0E-006	-	6.3E-006	7.3E-006)i	1	1	'		
			Cadmium	-	-	-		 					
]		Copper	1 -	-	-	_	1				Ì	
			Manganese	-		-	_		1			Į į	
		ľ	Nickel	-	-	-							,
			Silver	-	-	l -			1.				
		1	Thellium		-	-	_						
	1		Venedkim	-	-	-	_	l		[
		1	(10	tai) 1.1E-006	1	9.5E-006	1.1E-005	1		·			
	Test Pit Soil	AOC 1 - HRDD			1								
			Berizo(a)pyrene	3.1E-008	-	8.2E-007	8.5E-007	Benzo(a)pyrene	-	-	-	-	_
	l	l	Aradar-1248	1.8E-007	-	5.1E-006	5.3E-006	Arodor-1248	_	-	_	-	-
	1		Arodor-1254	5.1E-008	-	1.5E-006	1.6E-006	Arodor-1254	Immune	1.1E-002		2.8E-001	2.9E-001
	Į.	1	Antimony	-	_	_	_	Artimony	Whole body/blood	1.6E-003	_	2.9E-003	4.5E-003
	1		Arsenic	1.1E-008	_	7.0E-006	8.1E-006	Arsenic	Skin	2.2E-002	-	1.2E-001	1.4E-001
	l	Į.	1)	(el) 1.4E-006	+···· <u>·</u>	1.4E-005	1.6E-005	(To		3.5E-002		4.0E-001	4.3E-001

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TABLE 9.3.RME

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCS

REASONABLE MAXIMUM EXPOSURE HORSESHOE ROAD COMPLEX SITE, SAYREVILLE, NEW JERSEY

Scenario Timeframe: Future Receptor Population: Site Workers Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical		Card	inogenic Ris	k	Chemical		Non-Card	nogenic Hazar	rd Quotient	
	,,,,,,,,,,,,,	}	1	ingestion	inhalation	Dermal	Exposure		Primary	Ingestion	Inhalation	Dermal	Exposure
			1		1		Routes Total	it :	Target Organ				Routes Total
	Surface Soil	AOC 2 - ADC		**********	1	T				1		TO THE PARTY OF TH	
			Benzo(a)anthracene	2.8E-007	l _	4.0E-005	4.0E-005	Benzo(a)anthracene	· · · -		-] _	
			Benzo(b)fluoranthene	3.9E-006	_	5.7E-005	6.1E-005	Benzo(b)fluoranthene	_	_	l _	. '	_
		į.	Benzo(a)pyrene	2.6E-005	_	3.8E-004	4.1E-004	Benzo(a)pyrene	_	_	_		
		1	Indeno(1,2,3-cd)pyrene	1.8E-006	۱ ـ	2.3E-005	2.5E-005	Indeno(1,2,3-cd)pyrene	_	l _			
		ł	Dibenzo(s,h)anthracene	3.0E-006		4.4E-005	4.7E-005	Otbenzo(a,h)anthracene	_		_		
			Aldrin	1.2E-006		1.4E-005	1.5E-005	Aldrin	Liver	6.5E-003	_	7.6E-002	8.3E-002
j		1.	Diektrin	2.1E-008] [2.4E-005	2.6E-005	Diektin	Liver	7.3E-003	_	8.4E-002	9.1E-002
		Ì	Methoxychior	2.12.000	_		2.00.000	Methoxychlor	Reproductive	9.6E-002	_	1.1E+000	1.2E+000
	٠.	1	Aroclor-1248	1.2E-005	-	1.9E-004	2.0E-004	Aroclor-1248	Kapouchive	B.UE-002	_	1.124000	1.22400
			11	9.0E-007		1			_	I -	-		_
		1	Aroclor-1260		1	1.4E-005	1.5E-005	Aroclor-1260	-			-	-
		1	2,3,7,8-TCDD equiv.	8,3E-006	-	2,8E-005	3.6E-005	2,3,7,8-TCDD equiv.		2 0E 000	-		
			Antimony	45.00	-	-	45.004	Antimony	Whole body/blood	3.9E-002	-	4.6E-002	8.5E-002
			Arsenic	4.4E-004		1.5E-008	4.4E-004	Arsenic	Skin	5.9E+000	ļ 	2.1E+001	2.7E+00
			(Total)	5.0E-004		8.1E-004	1.3E-003	(Total)		6.1E+000		2.2E+001	2.8E+00
M.	Subsurface Soil	AOC 2 - ADC	1		Ì						1		
		J	1,2-Dichloroethane	6.4E-006	-	7.1E-004	7.2E-004	1,2-Dichloroethane	-	6.4E-003	-	7.4E-001	7.5E-001
			Benzo(b)fluoranthene	4.1E-007	-	6.0E-006	6.4E-006	Benzo(b)fluoranthene	-	-	-	- 1	-
		1	Benzo(a)pyrene	6.2E-006	-	8.9E-005	9.5E-005	Benzo(a)pyrene	-	-	-	-	-
		1	Methoxychlor	-	-	-	-	Methoxychlor	Reproductive	7.4E-002	-	8.7E-001	9.4E-001
		Ì	Aroclor-1242	3.8E-008	-	5.9E-005	6.3E-005	Aroclor-1242	-	-	-	-	-
		·	Aroclor-1248	2.7E-005	-	4.1E-004	4.4E-004	Arocior-1248	-	-	: -	-	-
			Arsenic	2.2E-004	 	7.5E-004	9.7E-004	Arsenic	Skin	1.4E+000	-	4.7E+000	6.1E+000
		İ	Thellium	-	J -	-	. –	Thatturn	Liver/blood	1.3E-002	-	1.5E-002	2.8E-002
		1	(Total)	2.7E-004	-	2.0E-003	2.3E-003	(Total)		1.4E+000	-	6.3E+000	7.8E+000
ikling	Bullding	AOC 2 - ADC		-	1	1							
aterials	Materials	l	Benzo(a)anthracene	1.4E-004	-	2.1E-003	2.2E-003	Benzo(a)anthracene	-	-	-	-	-
		1	Benzo(b)fluoranthene	1.6E-004	-	2.7E-003	2.9E-003	Benzo(b)fluoranthene	-	-	-	-] -
		1	Benzo(a)pyrene	1.4E-003	-	2.1E-002	2.2E-002	Benzo(a)pyrene	-	-	-	l –	-
		1	Indeno(1,2,3-cd)pyrene	3.9E-005	 -	5.7E-004	6.1E-004	Indeno(1,2,3-cd)pyrene	-	-	-	_	-
			Dibenzo(a,h)anthracene	1,2E-004	-	1.7E-003	1.8E-003	Dibenzo(a,h)anthracene	_	-	-	l -	-
		l.	Naphthalene		_	_ 1	_	Nachthalene	Whole body	7.8E-003	۱ _	1.2E-001	1.3E-001
			2-Methytnaphthalene	-	_	_	_	2-Methylnaphthalene	Whole body	2.7E-002	_	4.1E-001	4.4E-001
			Acenaphthene			l - :	_	Acenaphthene	Liver	6.5E-003	-	9.9E-002	1.1E-001
			Dibenzofuran	-			_	Dibenzoturan	_	1.2E-001	_	1.9E+000	2.0E+00
			Fluorene			_	_	Fluorene	Blood	2.0E-002	_	3.0E-001	3.2E-001
			Fluoranthene		1 _	_ '	_	Fluoranthene	Kidney/liver	4.8E-002	1 -	7.2E-001	7.7E-00
			Pyrene	_	1 _		_	Pyrana	Kidney	4.6E-002		6.9E-001	7.4E-00
		.	Methoxychior	-	١ _		_	Methoxychlor	Reproductive	1.5E-002	_	1.7E-001	1.9E-00
			Antimony				_	Antimony	Whole body/blood	7.0E-003	_	8.1E-003	1.5E-002
		ļ	Arsenic	2.3E-005		7.8E-005	9,9E-005	Arsenic	Skin	1.4E-001		4.8E-001	6.2E-00
		1	Copper	2.50-003		7.50-003	. 5.52-005	Copper		6.1E-003		7.1E-003	1.3E-002
		-	11 '''	1 - 3	_] [_	Manganese	_	1.0E-002	_	1.2E-002	2.2E-002
		1	Manganese	1 -	-	1 -		Thailum	Liver/blood	1.3E-002	1 -	1.5E-002	2.8E-00
		1	Thellum		1 -	_	_	ii ii		5.0E-003	1 -	5.8E-003	
		ţ	Zinc	0.05	. 		205 222	Zinc	Blood	4.7E-001	ļ .	4.9E+000	1.1E-002 5.4E+00
		1	(Total)	2.0E-003	Total Risk A	2.8E-002	3.0E-002	(Total)	otal Hazard Index A				4.1E+00

Total [Skin] Hi = | 3.4E+001 Total (Kichey) Hi = | 1.5E+000 Total (Reproductive) Hi = | 2.3E+000

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TABLE 9.3.CT SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCS CENTRAL TENDENCY EXPOSURE HORSESHOE ROAD COMPLEX SITE, SAYREVILLE, NEW JERSEY

Scerario Timeframe: Rubre Receptor Population: Site Workers Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical		Can	dnogenic Risi	k	Chemical		Non-Card	nogeric Haze	rd Quotient	
				Ingestion			Exposure Routes Total		Primary Target Organ	Ingestion	Inhelation	Dermai	Exposure Routes Total
oli	Surface Soll	AOC 2 - ADC						The second of th	1				
	\		Benzo(a)artiracene	7.6E-009	-	2.0E-006	2.0E-006	Benzo(a)artitracene	_	- '	-	-	_
	ĺ		Benzo(b)fluorenthene	1.3E-008	-	3.5E-006	3.5E-006	Benzo(b)fluorenthene	-	- 1	-	-	-
		1	Benzo(a)pyrene	9.0E-008	-	2.4E-005	2.4E-005	Benzo(a)pyrene	-	_ '	-	-	-
		İ	Indeno(1,2,3-cd)pyrene	5.5E-009	_	1.5E-006	1.5E-006	Indeno(1,2,3-cd)pyrene	-	_	_	-	
	}	1	Diberzo(a,h)ertirracene	4.3E-008	۱ -	1.1E-005	1.1E-005	Dibenzo(a,h)arithracene	-	- '	-	-	
	l	1	Adin	4.5E-009	-	9.1E-007	9.1E-007	Aldrin	Liver	7.6E-004	_	1.4E-002	1.5E-002
	ļ.	1	Dieldin	7.4E-009	_	1.5E-006	1.5E-008	Dialdin	Liver	8.0E-004		1.4E-002	1.5E-002
	Ì		Methoxychlor	_	_			Methoxychior	Reproductive	2.9E-003	_	2.9E-003	5.8E-003
			Arodor-1248	3.4E-008	1 _	9.7E-006	9.7E-006	Arodor-1248	_	_	_	_	-
			Arodor-1260	6.9E-009	_	2.0E-006	2.0E-008	Arodor-1260	_	_	_	l _	_
			2,3,7,8-TCDD equiv.	5.2E-008	_	3.2E-006	3.3E-006	2,3,7,8-TCDD equiv.	-	_ '		_	_
	ŀ	1	Aritmony	3.22.300		5.22-000	0.02.000	Antimony	Whole body/blood	1.4E-003	_	2.4E-003	3.8E-003
	l	ł	Arseric	7.1E-007		4.3E-006	5.0E-008	Arseric	Sidn	3.1E-002	_	1.7E-001	2.0E-001
	1		H	9.7E-007	†····	6.4E-005	6.5E-005	(Total)	1	3.6E-002		2.5E-001	2.0E-001
Soil	Subsurface Soil	AOC 2-ADC		3.7E-007	ļ	0.42-003	0.35-003	(1000)		3.0E-002		2.52-001	2.8E-001
Jun	Garagitace Gui	7002-ADC	1.2-Dichloroethane	5.6E-008		1.1E-005	1.1E-005	1.2-Dichigroethane	Ì	1.7E-004	_	3.1E-002	3.1E-002
	l ·	ł	Berzo(b)fluoranthene	8.2E-009	1	2.2E-007	2.3E-007	Benzo(b)fluoranthene	1 -	1./E-004	-	l	3.16-002
	Į.]	18	1	-			11	_	-	-	"	_
	i		Benzo(a)pyrene	9.5E-008	-	2.5E-006	2.8E-006	Benzo(a)pyrene		_	-	Ī	
	}]	Methoxychlar		-	-	-	Methoxychior	Reproductive	2.8E-003		4.7E-002	5.0E-002
			Arodor-1242	3.5E-009	-	1.0E-007	1.0E-007	Arodor-1242	-		-	-	-
	1		Arodar-1248	3.3E-007	-	9.6E-006	9.9E-008	Arodor-1248	-	-	-] -	-
			Arsenic	7.2E-007	-	4.4E-006	5.1E-008	Arsenic	Sidn	1.4E-002	-	7.6E-002	9.0E-002
	1		Thellium			·	l	Thailium	Liver/blood	2.9E-003		5.1E-003	8.0E-003
			(Tot	i) 1.2E-006		2.8E-005	2.9E-005	(Totel))	2.0E-002		1.6E-001	1.8E-001
Building	Building	AOC 2-ADC	1		1	-		1	1		1		
Materials	Materials		Benzo(s)artiracene	7.9E-006	-	2.1E-004	2.2E-004	Benzo(a)antivacene	-	-	-	-	-
			Benzo(b)fluorer#hene	9.1E-008	-	2.4E-004	2.5E-004	Benzo(b)fluorarithene	-	-	-	-	-
			Benzo(a)pyrene	7.2E-005	-	1.9E-003	2.0E-003	Benzo(a)pyrene	-	-	-	-	-
			Indeno(1,2,3-cd)pyrene	2.5E-006	-	6.6E-005	6.9E-005	Indeno(1,2,3-cd)pyrene	-	-	-	-	-
			Dibergo(a,h)enthracene	7.1E-006	_	1.9E-004	2.0E-004	Dibenzo(a,h)anthracene	_	-	-	-	-
		1	Naphihalone	_		-	_	Naphthalane	Whole body	1.0E-003	-	2.4E-002	2.5E-002
	1		2-Methylnaphthalane	-	-	-	_	2-Methylmaphthalene	Whole body	5.0E-003	-	1.2E-001	1.3E-001
			Acenephthene	_	۱ -	_	_	Acenephthene	Liver	1.2E-003	-	2.8E-002	2.9E-002
	1	l.	Dibengofuran	٠	-	_	_	Dibenzoturari	-	2.0E-002	_	4.7E-001	4.9E-001
		ŀ	Ruprene	_	١ _	_	_	Ruprene	Blood	2.9E-003	_	6.8E-002	7.1E-002
	1		Fluoranthene	_			_	Ruoranthene	Kidney/liver	9.2E-003		2.1E-001	2.2E-001
		\	Pyrene	_				Pyrene	Kidney	9.4E-003	_	2.2E-001	2.2E-001
	İ		Methoxychlar	_		_	_	Methoxychlor	Reproductive	1.5E-003	_	2.7E-002	2.9E-002
		ľ	Aritimony	_			_	Artimony	Whole body/blood	1.9E-003	_	3.3E-003	5.2E-003
		1	Arsenic	1.6E-006	-	9.7E-005	9.9€-005	Arseric	Skin	3.1E-002	_	1.7E-001	2.0E-001
	Į.	į	Copper	1.02-000	1	9.7E-005	8.82-003	Copper	· -	1.3E-003	_	2.3E-003	3.6E-003
		'	Manganese		-		_	Manganese	1 -	2.0E-003	_	3.6E-003	5.6E-003
	l .	l	Theilum	-	-	-	_	Marganese Thelium	Liver/blood	2.6E-003	_	4.6E-003	7.2E-003
	1		J	-	1 -	-	_	Zinc	Blood	6.5E-004	-	1.2E-003	1.9E-003
			Zinc										

TABLE 9.3.RME SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCS REASONABLE MAXIMUM EXPOSURE HORSESHOE ROAD COMPLEX SITE, SAYREVILLE, NEW JERSEY

Scenario Timeframe: Future Receptor Population: Site Workers Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical		Cerc	inogenic Ris	k	Chemical		Non-Card	nogenic Hazai	rd Quotient	
				Ingestion	inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Tota
olf	Surface Soil	AOC 3 - SPD		l	1								
		l	Benzo(a)anthracene	2.2E-007] -	3.2E-006	3.46-006	Benzo(a)anthracene	-	-	-	-	-
		1	Benzo(b)fluoranthene	3.8E-007	-	5.5E-008	5.92-006	Benzo(b)fluoranthene	-	-	-	-	-
			Benzo(a)pyrene	1.9E-006	-	2.8E-005	3.0€-005	Benzo(a)pyrene	-	-	-	-	-
		1.	indeno(1,2,3-cd)pyrene	1.7E-007	-	2.5E-006	2.7E-008	Indeno(1,2,3-cd)pyrene	-	-	-		-
		1	Methoxychior	i -	-	-		Methoxychlor	Reproductive	8.4E-002	-	7.4E-001	8.0E-001
			Akminum	-	-	- 1		Aluminum	-	4.1E-003	-	4.8E-003	8.9E-003
		Ì	Antimony	-] -	- '	-	Antimony	Whole body/blood	2.1E-002	-	2.4E-002	4.5E-002
		1	Arsenic	6.5E-006	-	2.2E-005	2.9E-005	Arsenic	Skin	3.9E-002	i -	1.4E-001	1.8E-001
		1	Copper	-	-	- '	-	Copper	-	1.9E-002	-	2.2E-002	4.1E-002
		1	Manganese	l –	-	- 1	-	Manganese	-	4.4E-003	-	5.1E-003	9.5E-003
			Thellum	-		- '	-	Theillum	Liver/blood	8.4E-003	j -	7.5E-003	1.4E-002
		1	Venedum	l .		l	[Vanadum	None	2.6E-003	ļ <u>-</u>	3.0E-003	5.6E-003
		1.	(Total)	9.2E-008	-	8.1E-005	7.0E-005	(Total)		1.6E-001	-	9.4E-001	1.1E+000
oli .	Subsurface Soli	AOC 3 - SPD								1		I	
		İ	Benzo(a)pyrene	1.2E-007	-	1.8E-008	1.9E-008	Benzo(a)pyrene	_	-	1 -	-	\
			Aroclor-1254	5.9E-008	-	9.2E-007	9.8E-007	Arocior-1254	Immune	4.0E-003	-	6.5E-002	6.9E-002
		1	Arocior-1280	8.3E-008	-	9.9E-007	1.1E-008	Arodor-1260	~	-	٠.	-	۱ -
]	Methoxychlor	-	_	-	-	Methoxychlor	Reproductive	1.8E-003	l -	2.1E-002	2.3€-002
			Akuminum	-	-	- 1	-	Aluminum	_	4.5E-003	-	5.2E-003	9.7E-003
			Antimony	-	- 1		_	Antimony	Whole body/blood	1.0E-003	_	1.2E-003	2.2E-003
		{	Arsenic	7.8E-006	-	2.6E-005	3.4E-005	Arsenic	Skin	4.7E-002	١ -	1.7E-001	2.2E-001
			Cadmium	_	l	_		Cadmium	Kidney	3.3E-004	_	3.8E-005	3.7E-004
		·	Manganese	l _ '	-	_		Manganese		4.0E-003	۱ ـ	4.7E-003	8.7E-003
			Thellum		l _	l - <u>-</u>		Thellum	Liver/blood	8.4E-003		9.8E-003	1.8E-002
			Venedum		۱ _		_	Vanadium	None	2.3E-003	۱ _	2.7E-003	
			11	8.1E-006		3.0E-005	3.8E-005	(Total)	,,,,,,,	7.4E-002		2.7E-001	3.5E-001
oil	Test PH Soll	AOC 3 - SPD				1							
- 1	1021100	1	Hexachioroathane	2.6E-005	l	2.9E-004	3.2E-004	Hexachloroethane	Kidney	5.0E+000	l _	5.8E+001	6.3E+001
		1	Benzo(s)pyrene	6.2E-006	_	8.9E-005	9.5E-005	Benzo(s)pyrene	.02.09	0.02.000	[]	5.527501	0.52.001
			Dibenzo(a,h)anthracene	1.2E-008	_	1.7E-005	1.2E-006	Dibenzo(a,h)anthracene		_	i -	_	"
		ĺ	Arodor-1248	7.6E-006	ı	1.7E-005	1.3E-004	Aroclor-1248		-	-	-	1 -
]	Aroctor-1248	1] -	i		li .			-	245,000	205,000
		ŀ	11	2.2E-006	i	3.40E-005	3.6E-005	Aroctor-1254	Immune	1.5E-001	-	2.4E+000	2.6E+000
)	Arsenic	2.1E-005	-	6.90E-005	9.0E-005	Arsenic	Skin	1.3E-001	-	4.4E-001	5.7E-001
		İ	Copper		ļ <u>.</u>			Copper	-	4.0E-001	ļ 	4.6E-001	8.6E-001
		l	(Total)	6.4E-005	Total Risk Ad	6.1E-004	6.8E-004	(Total)	otal Hazard Index A	5.7E+000	1	6.1E+001	6.7E+001

Total (Skin) HI = | 9.7E-001 Total (Kichey) HI = | 6.3E+001 Total (Immune) HI = | 2.6E+000

TABLE 9.3.CT SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCS CENTRAL TENDENCY EXPOSURE HORSESHOE ROAD COMPLEX SITE, SAYREVILLE, NEW JERSEY

Scenario Timeframe; Future Receptor Population; Site Workers Receptor Age; Adult

Medium	Exposure Medium	Exposure Point	Chemical		Caro	inogenic Risi	k	Chemical		Non-Care	inogenic Hazar	d Quotient	
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	ingestion	irtheletion	Dermal	Exposure Routes Total
Solt	Test Plt Soil	AOC 3 - SPD						1					
	1		Hexachloroethene	5.6E-010	-	1.2E-007	1.2E-007	Hexachtoroethane	Kidney	3.5E-004	-	6.3E-003	6.7E-003
			Benzo(a)pyrene	3.4E-007	-	8.9E-006	9.2E-008	Benzo(a)pyrene	l -	-] -	-	-
	Ì		Diberzo(a,h)antivacene	1.5E-007	-	4.1E-006	1.5E-007	Olbenzo(a,h)arthracene	-	-	- 1	-	-
			Arodor-1248	1.5E-007	-	4.40E-006	4.6E-006	Arodor-1248	-	-			-
	}		Arodor-1254	3.5E-008	-	1.0E-006	1.0E-006	Arodor-1254	Immune	7.6E-003	i - 1	1.9E-001	2.0E-001
			Arseric	7.4E-007	-	4.50E-006	5.2E-006	Arseric	Skin	1.4E-002	-	7.7E-002	9.1E-002
	1		Copper	-	-	-	-	Copper	-	1.8E-002	-	3.2E-002	5.0E-002
	1		(Total)	1.4E-006		2.3E-005	2.4E-005	(Total)		4.0E-002		3.1E-001	3.5E-001

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TABLE 9.3.RME

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCS REASONABLE MAXIMUM EXPOSURE

HORSESHOE ROAD COMPLEX SITE, SAYREVILLE, NEW JERSEY

Scenario Timeltame: Puture Receptor Population: Site Workers Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical]	Care	inogenic Risi	K	Chemical		Non-Card	nogenic Hazer	d Quotient	
				Ingestion	Inhalation	Dennal	Exposure Routes Total	·	Primery Target Organ	Ingestion	inhabition	Dermal	Exposure Routes Total
di .	Surface Soil	AOC 4 - ARC					and the second s						
		1	Benzo(b)fluoranthene	3.4E-007	-	4.9E-008	5.2E-006	Benzo(b)fluoranthene		-	-	-	-
	Į	Į	Benzo(a)pyrene	2.4E-006	-	3.4E-005	3.6E-005	Benzo(a)pyrene	-	- 1	-	-	-
		l	Hexachlorobutadiene	9.5E-008	-	1.1E-006	1.2E-006	Hexachlorobutadiene	Kidney	1.7E-002	-	1.95-001	2.1E-001
	ļ .	•	Hexachiorocyclopertadiene	-	-	-	· -	Hexachiorocyclopentadiene	Stomach	4.0E-003	-	4.7E-002	5.1E-002
	1		Aldrin	6.7E-008	-	7.5E-007	8.2E-007	Aktin	Liver	3.6E-004	i -	4.2E-003	4.6E-003
		İ	Arocior-1248	3.2E-007	-	5.0E-006	5.3E-006	Arodor-1248	-	-	-	-	-
	1	ļ	Arodor-1254	7.0E-007	-	1.1E-005	1.2E-005	Aroctor-1254	lmmune	4.85-002	-	7.76-001	8.2E-001
		1	Arodor-1260	1.7E-007	-	2.6E-006	2.8E-006	Arociar-1260	-	-	-	-	-
			2,3,7,6-TCDD equiv.	5.4E-008	-	1.8E-005	2.3E-005	2,3,7,8-TCDD equiv.	-	-	-	-	-
			Akıminum	1 -	-	-	_	Akminum	-	7.6E-003	-	8.8E-003	1.6E-002
	·	I	Antimony	-	-	-	-	Antimony	Whole body/blood	2.2E-002	-	2.6E-002	4.8E-002
. 1	1	1	Arsenic	7.3E-008	-	2.4E-005	3.1E-005	Arsenic	Skin	4.4E-002	-	1.5E-001	1.9E-001
İ	i ·	1	Cadmium	-	-	-	-	Cadmium	Kidney	1.8E-002	-	2.1E-003	2.0E-002
	Į	Į.	Copper	-	-	-	-	Copper	-	7.2E-003		8.45-003	1.6E-002
			Manganese		-	-	-	Manganese	· <u>-</u>	9.4E-003	-	1.1E-002	2.0E-002
			Nickel	-	-	-	-	Nickel	Body organs	7.3E-003	-	8.4E-003	1.6E-002
			Silver	-	-	-	·	Silver	Skin	2.8E-002) –	3.3E-002	6.1E-002
			Thellum	-	-	-	-	Thellum	Liver/blood	5.0E-003		5.9E-003	1.15-002
			Zinc	- 1	-	-		Zinc	Blood	1.5E-002	-	1.7E-002	3.2E-002
•	į.	1	(Total)	1.7E-005		1.0E-004	1.2E-004	•	(Total)	2.3E-001		1.3E+000	1.5E+000
	Subsurface Soil	AOC 4 - ARC	1								l		
	1		Tetrachioroethene	1.8E-007	-	2.0E-005	2.0E-005	Tetrachioroethene	Liver	9.4E-004	_	1.1E-001	1.1E-001
			Chlorobenzene	_	-	-		Chiorobenzene	Liver	7.3E-004	_	8.5E-002	8.6E-002
	1		Benzo(a)anthracene	1.0E-007	-	1.5E-006	1.6E-006	Benzo(a)anthracene	-	_	۱ -	_	_
			Benzo(b)fluoranthene	1.1E-007	_	1.6E-006	1.7E-008	Benzo(b)fluoranthene	. -	_	l	_	_
			Beruzo(a)pyrene	1.0E-006	- 1	1.5E-005	1.6E-005	Benzo(a)pyrene	_		٠ ـ	_	_
			Indeno(1,2,3-cd)pyrene	9.1E-008	_ ا	1.3E-008	1.4E-006	Indeno(1,2,3-cd)pyrene	_	_	l _	-	_
			1,2,4-Trichlorobenzene	_		_	_	1,2,4-Trichlorobenzene	Adrenal	5.5E-003	_	6.4E-002	7.0E-002
	}		Aldrin	1.7E-008	_	1.9E-007	2.1E-007	Aktin	Liver	9.3E-005	l _	1.1E-003	1.2E-00
			Aroclor-1248	5.4E-008	_	8.3E-007	8.8E-007	Aroclor-1248		_	1 _		
	1	į.	Arodor-1254	2.0E-008	_	3.1E-007	3.3E-007	Arocior-1254	Immune	1.4E-003		2.2E-002	2.3E-00
	ļ	l	Aluminum		_	3	-	Aluminum	-	6.4E-003	_	7.4E-003	1.4E-00
	ľ	1	Artimony			_	_	Antimony	Whole body/blood	2.6E-003	l _	3.0E-003	5.6E-00
			Arsenic	3.5E-006	_	1.2E-005	1,6E-005	Arsenic	Skin	2.1E-002	_	7.4E-002	9.5E-00
			Manganese	V.UL-000	- <u>-</u>		1,02-005	Manganese		2.7E-003		3.2E-003	5.9E-00
		1	Thailium	1 -		_	_	Thellum	Liver/blood	7.7E-003		9.0E-003	1.7E-003
	ľ	ł	Vanadum	_	-		_	Vanadum	None	3.0E-003		3.5E-003	6.5E-003
		Į	(Total)	5.1E-006	····- <u>-</u>	5.2E-005	# 7E 00E	(Total)		5.2E-002			4.3E-00
dno		AOC 4 - ARC	(10a)	3. IC-000	ļ <u>-</u>	5.2E-UUS	5.7E-005	(104)		5.26-002		3.8E-001	4.36-00
lang terlals	Building Materials	1-ARC	Aroctor-1254	1.1E-005		1.7E-004	1.8E-004	Arocior-1254	immune	7.4E-001	l _	1.2E+001	1.3E+00
(e) (iii)	- MALEONIAN	ł	if	1.1E-005	I		1.8E-004 2.0E-003	II .	(STRIPLETO)	1.76-001	-	1.257001	1.357001
		1	2,3,7,8-TCDD equiv.	4.0E-004	-	1.5E-003		2,3,7,8-TCDD equiv.		205.004	_	4.5E+001	8.4E+00
	i	1	Antimony	-	-	-	-	Antimony	Whole body/blood	3.9E+001	-	1	3
	l .	1	Arsenic	6.9E-005	ļ <u>.</u>	2.3E-004	3.0E-004	Arsenic	Skin	4.1E-001	ļ 	1.4E+000	1.8E+000
	L	L	[(Total)	5.4E-004	<u> </u>	1.9E-003	2.5E-003	IL	(Total) Fotel Hazard Index A	B	L	5.9E+001	9.9E+001

Total (Skin) HI = 2.2E+000

Total (Whole Body/blood) HI = 8.4E+001

Total [Immune] HI = 1.4E+001

TABLE 9.3.CT SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCS CENTRAL TENDENCY EXPOSURE HORSESHOE ROAD COMPLEX SITE, SAYREVILLE, NEW JERSEY

Scenario Timetrame: Future Receptor Population: Site Workers Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical		Card	inogeric Risi	τ	Chemical		Non-Card	nogenic Hazar	d Quotient	
				Ingestion	Irhalation	Dermal	Exposure	1	Primery	Ingestion	Irhelation	Dermal	Exposure
	l	ļ		1			Routes Total		Target Organ				Routes Total
icili	Surface Soil	AOC 4 - ARC								'			İ
	i		Benzo(b)Ruorarthene	2.8E-008	-	7.6E-007	7.9E-007	Benzo(b)fluoranthene	-	-	-	-	_
	1	1	Berzo(a)pyrene	2.8E-007	-	7.3E-006	7.6E-006	Benzo(s)pyrene	-	-	-	-]	-
	i	-	Hexachiorobutadiene	3.4E-009	-	6.9E-008	7.2E-008	Hexachiorobutadiene	Kidney	1.9E-003	-	3.4E-002	3.8E-002
	1	1	Hexachlorocyclopertediene	-	-	- 1	-	Hexachiorocyclopentaciene	Stomach	2.4E-005	-	4.4E-004	4.6E-004
	ŀ	İ	Adrin	6.3E-010	-	1.3E-008	1.4E-008	Aldılın	Liver	1.1E-005	-	1,9E-004	2.0E-004
		1	Arodor-1248	2.0E-009] -	5.7E-008	5.9E-008	Arodor-1248	-	- 1	-] -]	-
	1	1	Arodor-1254	2.9E-009		8.2E-008	8.5E-008	Arodor-1254	mmune	6.2E-004	-	1.6E-002	1.7E-002
	1	1	Arodor-1260	2.0E-009] ~	5.8E-008	6.0E-008	Arodor-1280	-	-	-	-	-
			2,3,7,8-TCDD equiv.	4.1E-007	-	2.5E-006	2.9E-006	2,3,7,8-TCDD equiv.	-	-	_	-	
	1	1	Aluminum	-] -	1 - 1	-	Akuminum	-	1.4E-003	-	2.5E-003	3.9E-003
	l		Antimony	-	-	-	-	Antimony	Whole body/blood	1.8E-003	-	3.2E-003	5.0E-003
			Arsenic	3.3E-007	- 1	2.5E-006	2.8E-006	Arsenic	Sidn	6.5E-003	-	3.5E-002	4.2E-002
		ļ	Cadmium	_	-	-		Cadmium	Kidney	2.6E-004	-	4.7E-005	3.1E-004
	1	}.	Copper	-	-	-	_	Copper	_	8.7E-004	_	1.6E-003	2.5E-003
	ļ	ļ	Manganese	-	- 1	-	-	Manganese	-	1.0E-003		1.8E-003	2.8E-003
	i		Nickel	-	_	_	_	Nickel	Body organs	2.1E-004	-	3.8E-004	5.9E-004
			Silver	_		_	_	Silver	Skin	2.6E-003		4.8E-003	7.4E-003
	ŀ		Thellum	-	-	-	_	Thellium	Liver/blood	1.5E-003	_	2.7E-003	4.2E-003
		Į.	Zinc	_	-	-	-	Zinc	Blood	7.2E-005		1.3E-004	2.0E-004
	1	I	(Total	1.1E-006		1.3E-005	1.4E-005		(Total)	1.9E-002		1.0E-001	1.2E-001
ulding	Building	AOC 4 - ARC										l	
latorials	Materials	ŀ	Arodor-1254	2.6E-007	_	7.4E-006	7.7E-006	Arodor-1254	Immune	5.6E-002	_	1.4E+000	1.5E+000
	(1	2,3,7,8-TCDD eq.iv.	1.1E-005	_	6.8E-005	7.9E-005	2,3,7,8-TCDD eq.(v.	_	_	_	_	-
	1		Artimony	-	-	_	-	Antimony	Whole body/blood	4.5E+000	-	8.1E+000	1.3E+001
	l	Į.	Arseric	5.3E-006	l _	3.3E-005	3.8E-005	Arseric	Sido	1.0E-001	_	5.6E-001	6.6E-001
	1	1	11	1.7E-005	·····	1.1E-004	1.2E-004	1		4.7E+000		1.0E+001	1.5E+001

TABLE 9.4.RME

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCS REASONABLE MAXIMUM EXPOSURE

HORSESHOE ROAD COMPLEX SITE, SAYREVILLE, NEW JERSEY

Scenario Timeframe: Future Receptor Population: Construction Workers Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical		Caro	inogenic Riel	k .	Chemical		Non-Carol	nogenic Hazar	d Quotient	
		l l	1	Ingestion	Inhalation	Dermai	Exposure		Primary	Ingestion	Inhalation	Dermai	Exposure
				e se seinos n			Routes Total	1	Target Organ				Routes Tot
i	Surface Soll	AOC 1 - HRDD	<u> </u>			1		1	· · · · · · · · · · · · · · · · · · ·		- 10 P. B. B. B. B. B. B. B. B. B. B. B. B. B.		
			Dieldrin	3.3E-008	-	4.2E-008	7.5E-008	Diektrin	Liver	2.9E-003	-	3.8E-003	6.7E-003
			Aroclor-1248	3.2E-007	-	5.9E-007	9.1E-007	Aroctor-1248	-	-	-	-	-
		ł	Aroclor-1254	2.9E-008	-	5.2E-008	8.1E-008	Aroclor-1254	Immune	5.1E-002	-	9.5E-002	1.5E-001
	1		Arador-1260	2.4E-008	-	4.4E-008	6.8E-008	Aroclor-1260	-	-		-	-
]		Aluminum	-	~	-		Aluminum	-	1.7E-002	-	2.3E-003	1.9E-002
	1		Antimony	-	-	-	-	Antimony	Whole body/blood	1.0E-002	-	1.4E-003	1.1E-002
			Arsenic	1.4E-006		5.2E-007	1.9E-006	Arsenic	Skin	2.1E-001	-	8.5E-002	3.0E-001
			Cadmium	-	-	-	- ,	Cadmium	Kidney	5.4E-003	-	7.2E-005	5.5E-003
		1	Copper	-	-	-	-	Copper	-	1.3E-002	-	1.7E-003	1.5E-002
	1.	1	Manganese	-	-	-	-	Mangenese	-	2.1E-002	-	2.8E-003	2.4E-002
			Nickel	-	-	-	-	Nickel	Body Organs	6.5E-003	-	8.6E-004	7.4E-003
			Silver		-	-		Silver	Skin	7.2E-003	-	9.6E-004	8.2E-003
		l .	Thellum	-		-	_	Thelium	Liver/blood	1.7E-002	-	2.3E-003	1.9E-002
			Venacium		l			Vanadum	None	1.1E-002		1.5E-003	1.3E-002
			(Total)	1.6E-006	-	1.2E-008	3.0E-006		(Total)	3.7E-001		2.0E-001	5.7E-00
•	Subsurface Solf	AOC 1 - HRDD	1			1 1							
	1	1	Aroctor-1248	4.4E-008	-	8.0E-008	1.2E-007	Arodor-1248	-	-	-	-	-
		1	Aroclor-1254	3.3E-009	-	5.9E-009	9.2E-009	Aroclor-1254	Immune	5.8E-003	-	1.1E-002	1.7E-002
	<u>}</u>		Aroctor-1280	1.1E-007	-	1.9E-007	3.0E-007	Aroclor-1260	-	-	_		-
	1	1	Aluminum	-	i -	-	-	Akıminum	-	1.3E-002	-	1.7E-003	1.5E-002
		[Antimony	-	-	-	-	Antimony	Whole body/blood	1.5E-002	-	2.0E-003	1.7E-002
		Į.	Arsenic	6.2E-007	-	2.4E-007	8.6E-007	Arsenic	Skin	9.8E-002	-	3.9E-002	1.4E-001
	i	1.	Cadmium	-	-	-	-	Cadmium	Kidney	5.3E-003		7.0E-005	5.4E-003
	Į.	1	Copper	-	-	-	-	Copper	-	3.7E-002	-	4.9E-003	4.2E-002
		1	Manganese	-	-	-	-	Mangenese	-	2.4E-002	-	3.2E-003	2.7E-002
		1	Nickel	-	-	-	-	Nickel	Body Organs	1.0E-002	-	1.4E-003	1.1E-002
			Thellum		-	-	-	Thallun	Liver/blood	4.3E-002	-	5.7E-003	4.9E-002
		}	Variadium		l	-	-	Vanadum	None	8.6E-003		1.1E-003	9.7E-003
			(Total)	7.8E-007		5.2E-007	1.3E-008		(Total)	2.6E-001		7.0E-002	3.3E-001
ı	Test Pit Soil	AOC 1 - HRDD	11.		1		:	1		1		1	
		1	Benzo(a)pyrene	1.7E-007	-	2.8E-007	4.5E-007	Benzo(a)pyrene		-	-	-	-
			Aroclor-1248	1.4E-008	-	2.5E-006	3.9E-006	Aroclor-1248	-		-	-	
		į	Aroctor-1254	2.1E-007	-	3.8E-007	5.9E-007	Aroclor-1254	Immune	3.7E-001	-	6.9E-001	1.1E+00
	ŀ		Antimony	_	-	-	-	Antimony	Whole body/blood	3.9E+000	-	5.2E-001	4.4E+00
	1	1	Arsenic	1.8E-005	ļ <u>-</u>	7.0E-006	2.5E-005	Areenic	Sidn	2.8E+000	ļ -	1.1E+000	3.9E+00
	l	<u> </u>	(Total)	2.0E-005	L =	1.0E-005	3.0E-005		(Total)	7.1E+000	l=	2.3E+000	9.5E+000

Total (Skin) HI = | 4.3E+000 Total [Immune] HI = | 1.2E+000 Total [Whole Body/Blood] HI = | 4.4E+000 TABLE 9.4.CT

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

CENTRAL TENDENCY EXPOSURE

HORSESHOE ROAD COMPLEX SITE, SAYREVILLE, NEW JERSEY

Scenerio Timeframe: Pulture Receptor Population: Construction Workers Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical		Caro	Inogenic Risk	(Chemical		Non-Card	nogenic Hazar		
				Ingestion	trhalation	Dermal	Exposure		Primary	Ingestion	Irheletion	Dermal	Exposure
							Routes Total		Terget Organ	1 1		·	Routes Total
oll	Test Pit Soll	AOC 1 - HRDD											I
	1							Benzo(a)pyrene	-	-	-	-) -
		j						Arodor-1248	_		-	_	
	ŀ							Arodor-1254	kmmune	5.6E-002	-	1.2E-001	1.8E-001
								Antimony	Whale body/blood	9.6E-003	-	1.3E-003	1.1E-002
	[-							Arseric	Skin	1.3E-001	-	5.3E-003	1.4E-001
	l							(To	lei)	2.1E-001		1.8E-001	3.9E-001

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TABLE 9.4.RME

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCS REASONABLE MAXIMUM EXPOSURE

HORSESHOE ROAD COMPLEX SITE, SAYREVILLE, NEW JERSEY

Total [Reproductive] HI = 1.1E+000

2.6E-001

Total (Kidney) HI =

Receptor Population: Construction Workers Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical		Carc	inogenic Risi	t .	Chemical		Non-Carci	nogenic Hazar	d Quotient	
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhelation	Dermai	Exposure Routes Tat
•	Surface Soil	AOC 2 - ADC		1.00	İ					TOST TOTAL	tir viirmastai.	***********	1.10 1.10 200
			Benzo(a)anthracene	2.6E-007	-	4.4E-007	7.0E-007	Benzo(a)anthracene	- '	-	-	-	
			Benzo(b)fluoranthene	3.7E-007	i -	6.3E-007	1.0E-006	Benzo(b)fluoranthene			~	-	-
			Benzo(a)pyrene	2.5E-008	-	4.2E-008	8.7E-006	Senzo(a)pyrene	- 1	- 1	-	- 1	-
			Indeno(1,2,3-cd)pyrene	1.5E-007	-	2.5E-007	4.0E-007	Indeno(1,2,3-cd)pyrene	-,	-	-	-	-
		 	Dibenzo(a,h)arthracene	2.9E-007		4.8E-007	7.7E-007	Dibenzo(a,h)anthracene		-	-	-	_
			Akhin	1.2E-007	-	1.5E-007	2.7E-007	Aldrin	Liver	1.6E-002	~	2.1E-002	3.7E-002
		, ·	Dieldrin	2.0E-007	l –	2.6E-007	4.6E-007	Dieldrin	Liver	1.8E-002	-	2.4E-002	4.2E-002
		ŀ	Methoxychior		-	-	_	Methoxychior	Reproductive	2.4E-001	_	4.4E-001	6.8E-001
			Aroclor-1248	1.2E-006	-	2.1E-006	3.3E-006	Arocior-1248	-	-	-	- 1	_
			Aroclor-1280	8.5E-008	۱ ـ	1.5E-007	2.4E-007	Aroclor-1260	-		-	_	_
			2,3,7,8-TCDD equiv.	7.9E-007	_	3.0E-007	1.1E-006	2,3,7,8-TCDD equiv.	_	_	_	_	_
	l		Antimony		-	_	-	Antimony	Whole body/blood	9.6E-002	-	1.3E-002	1.1E-001
			Arsenic	4.1E-005	_	1.6E-008	4.1E-005	Arsenic	Skin	1.5E+001		5.8E+000	2.1E+00
		1	(Total)		·····	9.0E-008	5.6E-005	(Total)	,	1.5E+001		6.3E+000	2.1E+001
i	Subsurface Soil	AOC 2 - ADC		7.7.2-003	\	0.0L-000	J.0L-005	((a.s.)	· · · · · - · · · · · · · · · · · · · ·	1.50.001		0.50.7000	2.12.00
•	School lace Still	100 2 - ALC	1,2-Dichloroethane	6.0E-007	_	7.8E-008	8.4E-006	1,2-Dichloroethane		1.6E-002	_	2.1E-001	2.3E-001
			Benzo(b)fluoranthene	3.9E-008	-	6.6E-008	1.1E-007	Benzo(b)fluoranthene	_	1.00-002	_	2.10-001	2.36-00
								18		-	-	-	_
			Benzo(a)pyrene	5.8E-007	1	9.8E-007	1.6E-006	Benzo(a)pyrene			1		
		Ì	Methoxychior		-			Methoxychlor	Reproductive	1.8E-001	-	2.4E-001	4.2E-00
		Ì	Arocior-1242	3.6E-007	-	6.5E-007	1.0E-006	Aroclor-1242	-	-	-	-	-
			Arocior-1248	2.5E-006	-	4.6E-006	7.1E-008	Aroclor-1248	-	-	-	-	-
			Arsenic	2.1E-005	-	8.2E-006	2.9E-005	Arsenic	Skin	3.3E+000	-	1.3E+000	4.6E+00
			Thelium		.l -	-	-	Theffum	Liver/blood	3.1E-002	l .	4.1E-003	3.5E-00
			(Total)	2.5E-005	1 -	2.2E-005	4.7E-005	(Total)	ļ.	3.5E+000]	1.8E+000	5.3E+00
lding	Building	AOC 2 - ADC											
terials	Materials	1	Benzo(s)snthracene	1.4E-005	-	2.3E-005	3.7E-005	Benzo(a)anthracene	-	- !		-	-
			Benzo(b)fluoranthene	1.7E-005	-	2.9E-005	4.6E-005	Benzo(b)fluoranthene	-	-	~	- 1	-
			Benzo(a)pyrene	1.4E-004		2.3E-004	3.7E-004	Benzo(a)pyrene	-	[-	-	l - 1	-
		İ	Indeno(1,2,3-cd)pyrene	3.7E-006	-	6.3E-006	1.0E-005	Indeno(1,2,3-cd)pyrene	-	i -	-	-	-
			Dibenzo(a,h)anthracene	1.1E-005	-	1.9E-005	3.0E-005	Dibenzo(a,h)anthracene	-	-	-	- 1	
		1	Naphthelene	-	-	1 - 1	-	Naphthalene	Whole body	1.9E-002	-	2.5E-003	2.2E-00
	}	L 1	2-Methylnaphthalene	-	-	-	_	2-Methylnaphthalene	Whole body	6.6E-002		8.6E-003	7.5E-00;
			Acensylttene	-	-	_	_	Acensphthene	Liver	1.6E-002	l -	2.1E-003	1.8E-00
	ŀ		Dibenzofuran	_	_	_	-	Dibenzofuran		3.0E-001	_	3.9E-002	3.4E-00
			Fluorene	l _	.			Fluorene	Blood	4.8E-002	_	6.2E-003	5.4E-00
	·		Fluoranthene	l _	1 _		_	Fluoranthene	Kidney/liver	1.2E-001	١	1.5E-002	1.4E-00
			Pyrene	_	_	1 _	_	Pyrene	Kidney	1.1E-001		1.5E-002	1.3E-00
			Methoxychlor		_		_	Methoxychlor	Reproductive	3.6E-002		3.6E-003	4.0E-00
			Antimony	-		-	· - -	Antimony	Whole body/blood	1.7E-002		1.7E-004	1.7E-00
			Arsenic	2.15-006	1 -	8.3E-007	2.9E-006	Areenic	Skin	3.4E-001		1.0E-002	3.5E-001
	1		F)	2.15-000	1	0.35-00/		II .	Skill	1.5E-002] [1.0E-002 1.5E-004	1.5E-002
			Copper	-	-	-	.=	Copper	_	I		1 '	1
		1	Mangenese	-	-	-	-	Manganese		2.5E-002	-	2.5E-004	2.5E-002
			Thalium	-	-	-	-	Thallium	Liver/blood	3.1E-002	-	3.1E-004	3.1E-002
	ľ	ŀ	Zinc		.	Į		Zinc	Blood	1.2E-002	ļ 	1.2E-004	1.2E-00;
	ı	1	II (Totel)	1.8E-004	1	3.1E-004	4.9E-004)) (Total)	ì	1.1E+000	1 -	1.4E-001	1.3E+00
	<u> </u>				Total Risk Ad			. 11	Total Hezerd Index Ac	4	transparan	4	2.8E+00

TABLE 9.4.CT SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPC\$ CENTRAL TENDENCY EXPOSURE HORSESHOE ROAD COMPLEX SITE, SAYREVILLE, NEW JERSEY

Scenario Timetrame: Puture Receptor Population: Construction Workers Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical		Card	dnogeric Ris	K	Chemical		Non-Cand	Inogenic Hezer	rd Quotient	
				Ingestion	Inhelation	Dermei	Exposure		Primary	ingestion	Irhelation	Dermal	Exposure
						<u> </u>	Routes Total		Target Organ				Routes Total
oli	Surface Soll	AOC 2 - ADC		İ		i	ĺ	1					
	ì		Ĭ	1				Benzo(a)anthracene	-	-	-	-	-
	ł	1	.	- 1			1	Benzo(b)fluoranthene	-	-	-	i -	-
				į	l	l		Benzo(a)pyrene	-	-	-		l -
į	İ			- 1	1	1		Indeno(1,2,3-cd)pyrene	-	·	1 -	! -	-
. 1			- [1	1		ļ	Dibenzo(a,h)anthracene	-	-	l –		-
	1	1	N .	1	1	1		Aidrin	Liver	4.6E-003	-	8.1E-003	1.1E-002
		1	i i	ĺ				Dieldrin	Liver	4.8E-003	-	8.4E-003	1.1E-002
- 1]	1		1	1			Methoxychior	Reproductive	1.7E-002	-	3.3E-002	5.0E-002
	Ì	1		1	1]	Arodor-1248	_	_] _	ì -	_
]	i					İ	Arodor-1260	_	_	l _	l -	_
	l		1	- 1				2,3,7,8-TCDD equiv.	_		_ ا	۱ _	
				1		1		Antimony	Whole body/blood	8.1E-003	l <u>.</u>	1.1E-003	9.2E-003
		ļ		1			Ì	Arseric	Skin	1.8E-001	_	7.4E-002	2.5E-001
			1	1	1	1	}	(Total)		2.2E-001	····· <u>-</u>	1.2E-001	3.4E-001
off	Subsurface Soil	AOC 2-ADC						(100)		2.22-001	<u>-</u>	1.22-001	3.75-001
	00000000	1002 700		- 1				1,2-Dichloroethane		1.1E-003		1.45-002	1.5E-002
	}	1	·) .	1	1	1	}	Benzo(b)fkuorarane		1.12-003	1 -	1.42-002	1.55-002
		1		1		l		Benzo(a)pyrene	-	_	-	-	_
				- 1		ļ ·	1	H	-		-	-	
		}		1				Methoxychlor	Reproductive	1.6E-002	-	2.1E-002	3.7E-002
				1				Arodor-1242	-	-	-	-	-
		\ .	` \	1	1	1		Arodor-1248		-	-		
		ł		1	ł			Arseric	Skin	8.4E-002	-	3.4E-002	1.2E-001
			.					Thalium	Liver/blood	1.7E-002	ļ .	2.3E-003	1.7E-002
	<u> </u>	ļ]	ļ <u></u>	1		(Total)		1.2E-001	-	7.1E-002	1.9E-001
uilding .	Building	AOC 2-ADC				1		1					
laterials	Materials	,	Benzo(a)entivacene	5.8E-006	-	9.8E-006	1.6E-005	Banzo(a)anthracene	-	-	-	-	-
			Benzo(b)fluoranthene	6.7E-006	-	1.1E-005	1.8E-005	Benzo(b)fluoranthene	-	-	-	-	-
			Benzo(a)pyrene	5.3E-005	-	8.9E-005	1.4E-004	Benzo(a)pyrene	-	-	- '	-	-
	1	1	Indeno(1,2,3-cd)pyrane	1.8E-006	-	3.1E-005	3.3E-005	Indeno(1,2,3-cd)pyrene	-	-	-	- '	-
			Dibenzo(a,h)anthracene	5.3E-006	-	8.9E-006	1.4E-005	Dibenzo(a,h)artizacene	-	-	-	- 1	-
			Naphthalane	-	-	-	- 1	Naphthalene	Whole body	6.1E-003	l –	7.9E-004	6.9E-003
	Ì		2-Methylnaphthalene	-	-	-	-	2-Methylnaphthalene	Whole body	3.0E-002	<u> </u>	3.9E-003	3.4E-002
	l	! ·	Acenephthene	-			-	Acenaphthene	Liver	7.1E-003	-	9.3E-004	8.0E-003
	1		Dibenzofuran	\ -	_	-	_	Dibenzofuran	-	1.2E-001	-	1.6E-002	1.4E-001
	İ		Fluorene	-	-	ł –	_	Fluorene	Blood	1.8E-002	-	2.3E-003	2.0E-002
	·		Fluoranthene	-	-	l –	-	Fluoranthene	Kjdney/liver	5.5E-002	-	7.2E-003	6.2E-002
		1.	Pyrane	1 -	_	_	i -	Pyrene	Kidney	5.6E-002	-	7.3E-003	6.3E-002
	1		Methoxychior	1 -		_	_	Methoxychior	Reproductive	9.1E-003	_	9.1E-004	1.0E-002
'			Artimory	-	_	l _	_	Antimony	Whole body/blood	1.1E-002	l _	1.1E-004	1.1E-002
		1	Arsenic	1.2E-006		4.6€-007	1.7E-006	Arseric	Skin	1.8E-001	_	5.5E-003	1.9E-001
			Copper	1.22-000		4.06-007	1.72-000	Copper		7.6E-003		7.8E-005	7.7E-003
	1	{	Manganese	_	-	_		Manganese	_	1.2E-002		1.2E-004	1.2E-002
	ľ		H . T	1	-	1	_	11 -	Liver/blood	1.5E-002		1.5E-004	1.5E-002
	ĺ	ľ	Thellum	-	-	-	-	Thelium			-		1
	i	1	Zinc	l		.	i	Zinc	Blood	3.9E-003		3.9E-005	3.9E-003

TABLE 9.4.RME SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCS REASONABLE MAXIMUM EXPOSURE HORSESHOE ROAD COMPLEX SITE, SAYREVILLE, NEW JERSEY

Scenario Timeframe: Future Receptor Population: Construction Workers Receptor Age: Adult

Medum	Exposure Medium	Exposure Point	Chemical		Caro	inogenic Risi	t	Chemical		Non-Carol	nogenic Hazar	d Quotient	
			1.	Ingestion	inhalation	Dermal	Exposure		Primary	ingestion	Inhalation	Dermal	Exposure
		<u> </u>			<u> </u>	11	Routes Total		Target Organ				Routes Total
	Surface Soil	AOC 3 - SPD		1	1	I I							
			Benzo(a)anthracene	2.1E-008	-	3.6E-008	5.7E-008	Benzo(a)anthracene	-	-	-	- '	- '
		İ	Benzo(b)fluoranthene	3.6E-008	-	6.0E-008	9.6E-008	Benzo(b)fluoranthene	_		-	_	_
			Benzo(a)pyrene	1.8E-007	-	3.1E-007	4.9E-007	Senzo(a)pyrene	-	- 1	-	-	-
		l	Indeno(1,2,3-cd)pyrene	1.6E-008	i -	2.7E-008	4.3E-008	Indeno(1,2,3-od)pyrene	_	- '	-	-	-
			Methoxychior	-	-	1 - 1		Methoxychlor	Reproductive	1.8E-001	-	2.1E-001	3.7E-001
			Akurdnum	-	-	-	-	Aluminum	-	1.0E-002	-	1.3E-003	1.1E-002
			Antimony	-	_	l - l	_	Antimony	Whole body/blood	5.1E-002	-	6.8E-003	5.8E-002
			Arsenic	8.1E-007	-	2.4E-007	8.5E-007	Arsenic	Skin	9.6E-002	-	3.8E-002	1.3E-001
		1	Copper	-	i -	-	-	Copper	-	4.6E-002	_	6.1E-003	5.2E-002
			Mangenese	-	-] -]	-	Manganese	-	1.1E-002	_	1.4E-003	1.2E-002
		l	Thallum	- 1	-	-	-	Thailium	Liver/blood	1.6E-002	-	2.1E-003	1.8E-002
	1.		Verstdum	-	-	-	-	Vanadum	None	6.3E-003	-	8.5E-004	7.2E-003
			(Total)	8.7E-007	_	6.7E-007	1.5E-006	(Total	ı j	3.9E-001	-	2.7E-001	6.6E-001
H	Subsurface Soil	AOC 3 - SPD			1	[
		Į.	Benzo(a)pyrene	1.2E-008	-	1.9E-008	3.1E-008	Benzo(a)pyrene	-	- 1	-	-	-
		1	Aroclor-1254	5.6E-009	-	1.0E-008	1.6E-008	Aroclor-1254	immune	9.8E-003	-	1.8E-002	2.8E-002
		1	Arocior-1280	6.0E-009	-	1.1E-008	1.7E-008	Aroclor-1260	-	-	-	-	-
		İ	Methoxychior	-	-	-	. -	Methoxychlor	Reproductive	4.3E-003	-	5.8E-003	1.0E-002
		ŀ	Aluminum	-	- 1	-	-	Aluminum	_	1.1E-002	-	1.5E-003	1.3E-002
		į	Antimony	- 1		l - I	-	Antimony	Whole body/blood	2.5E-003	-	3.3E-004	2.8E-003
			Arsenic	7.4E-007	_	2.0E-007	1.0E-006	Arsenic	Skin	1.2E-001	_	4.6E-002	1.7E-001
		ŀ	Cadmium	-	-	-	-	Cadmium	Kidney	8.0E-004	-	1.1E-006	8.1E-004
		1	Manganese	-	-	-	, -	Manganese	-	9.9E-003	-	1.3E-003	1.1E-002
		1	Thellum	-	-	-	-	Thallum	Liver/blood	2.1E-002	-	2.7E-003	2.4E-002
			Vanadium	-	-	1 - 1	_	Vanadium	None	5.7E-003	_	7.5E-004	.
			(Total)	7.6E-007	-	3.3E-007	1.1E-008	(Total		1.8E-001	-	7.7E-002	2.0E-001
H	Test Pit Soil	AOC 3 - SPD			1								
		ļ.	Hexachioroethane	2.4E-008	-	3.1E-006	5.5E-006	Hexachioroethane	Kichey	1.2E+001	-	1.6E+001	2.8E+001
			Benzo(a)pyrene	5.8E-007	-	9.8E-007	1.6E-006	Benzo(a)pyrene	-	-	-	-	-
		!	Dibenzo(a,h)anthracene	1.1E-007	-	1.9E-007	1.1E-007	Dibenzo(a,h)anthracene	-	-		-	-
ļ		4	Aroclor-1248	7.1E-007	-	1.30E-006	2.0E-006	Aroclor-1248	-	-	-		-
]			Aroclor-1254	2.0€-007	-	3.70E-007	5.7E-007	Aroclor-1254	Immune	3.6E-001	-	6.7E-001	1.0E+000
		l	Arsenic	2.0E-008	-	7.60E-007	2.8E-006	Arsenic	Sidn	3.1E-001	-	1.2E-001	4.3E-001
			Copper	-	-			Copper	-	9.7E-001	-	1.3E-001	1.1E+000
		<u> </u>	(Total)	6.0E-006		6.7E-006	1.3E-005	(Total	·	1.4E+001	<u> </u>	1.7E+001	3.1E+001
					Total Risk Ac	ross[Media]			Total Hazard Index A	ross Al Med	fa and All Exp	osure Routes	3.1E+001

Total [Kidney] HI = 2.8E+001

Total [Skin] HI = 7.3E-001

Total [Immune] HI = 1.1E+000

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TABLE 9.4.CT SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCS CENTRAL TENDENCY EXPOSURE HORSESHOE ROAD COMPLEX SITE, SAYREVILLE, NEW JERSEY

Scenario Timeltume: Future Receptor Papuletion: Construction Workers Receptor Age: Adult

		T		T	Total design								
Medum	Exposure	Exposure	Chemical		Cerc	Inogenic Ris	k	Chemical		Non-Card	nogeric Hazer	d Quotient	
	Medium	Point		1									
1				Ingestion	trhelation	Dermai	Exposure		Primery	Ingestion	Inhelation	Dermal	Exposure
				l	,	ļ	Routes Total		Target Organ	1			Routes Total
Soil	Test Pit Soil	AOC 3 - SPD											
				1			1	Hexachioroethane	Klidney	2.1E-003	-	2.8E-003	4.9E-003
1				}				Benzo(a)pyrene	-	-	-	-	-
li	!			ì				Diberzo(a,h)er#racene	-	- 1	-	-	-
1		`		1	}			Arodor-1248	-	- 1	-		-
				1				Arodor-1254	Immune	4.6E-002		8.6E-002	1,3E-001
]	1	1		1			•	Arsenic	Skin	8.6E-002	-	3.4E-002	1.2E-001
								Copper	-	1.1E-001		1.4E-002	1.2E-001
ĬL			<u> </u>	1	l			(Totel)	l	2.4E-001	-	1.4E-001	3.8E-001

TABLE 9.4.RME SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPC® REASONABLE MAXIMUM EXPOSURE HORSESHOE ROAD COMPLEX SITE, SAYREVILLE, NEW JERSEY

Scenario Timeframe: Future Receptor Population: Construction Workers Receptor Age: Adult

Medium	Exposure	Exposure Point	Chemical		Card	dnogenic Ris	k	Chemical	[Non-Card	nogenic Hazer	d Quotient	
				Ingestion	Inhalation	Dermal	Exposure	1	Primary	Ingestion	Inhalation	Dermai	Exposure
	1		- (Routes Total	ll .	Target Organ				Routes Tota
H .	Surface Soil	AOC 4 - ARC		1	1	1				waterway, t.			
	1		Benzo(b)fluoranthene	3.2E-008	-	5.4E-008	8.6E-008	Benzo(b)fluoranthene	_	_	_	_	_
	1.		Benzo(a)pyrene	2.2E-007	_	3.8E-007	6.0E-007	Benzo(a)pyrene	_	_		۱ ـ	_
	\		Hexachlorobutadiene	9.0E-009	-	1.2E-008	2.1E-008	Hexachiorobutadiene	Kidney	4.1E-002		5.4E-002	9.5E-002
	1		Hexachlorocyclopentaciene	_		_	_	Hexachiorocyclopentaciene	Stomach	9.8E-003	_	1,3E-002	2.3E-002
	1		Aldrin	6.4E-009	۱ ـ	8.2E-009	1.5E-008	Aldrin	Liver	8.8E-004	_	1.2E-003	2.1E-003
	l	'	Arocior-1248	3.0E-008	_	5.5E-008	8.5E-008	Aroctor-1248	_	_		_	_
	1	1	Arodor-1254	6.6E-008	_	1.2E-007	1.9E-007	Aroclor-1254	Immune	1.2E-001	_	2.2E-001	3.46-001
			Aracior-1260	1.6E-008	l _	2.9E-008	4.5E-008	Aroclor-1260			_	-	_
	j	l	2,3,7,8-TCDD equiv.	5.1E-007	-	2.0E-007	7.1E-007	2,3,7,8-TCDD equiv.	1 -	_	_	_	_
	1	Ì	Aluminum	_				Aluminum		1.9E-002	_	2.6E-003	2.2E-002
	1	} .	Antimony	_	_	_	_	Antimony	Whole body/blood	5.4E-002	_	7.2E-003	8.1E-002
	1		Arsenic	6.9E-007	-	2.7E-007	9.6E-007	Arsenic	Skin	1.1E-001	_	4.3E-003	1.5E-001
	1		Cadmium		_		a.uc-uu	Cadmium	Kidney	4.4E-002	_	5.9E-004	4.5E-002
	1	1	Copper	1 -	l		_	Copper	Nuivy	1.8E-002	_	2.4E-003	2.0E-002
	1	1	Manganese	1 -	_]	Manganese]	2.3E-002	_	3.1E-003	2.0E-002
	1		Nickel				_	Nickel	Body organe	1.8E-002	· -	2.4E-003	2.0E-002
	Ì		Silver	1 -		1 -		Silver	Sidn	6.9E-002] [9,2E-003	7.8E-002
	1		Thailium	_	_	-	_	Theffum	Liver/blood	1.2E-002		1.6E-003	1
	Ì	1	Zinc] -	-	_	_	1	Blood		_	1	1.45-002
	ł		11		····-			Zinc		3.7E-002	-	4.9E-003	4.2E-002
	I		(Total)	1.85-008	ļ .	1.1E-008	2.7E-006		(Total)	5.7E-001		3.6E-001	9.3E-001
ril .	Subsurface Soil	AOC 4 - ARC			l			L	1				
	1		Tetrachioroethene	1.7E-008	-	2.2E-007	2.4E-007	Tetrachloroethene	Liver	2.3E-003] -	3.1E-002	3.3E-002
	1		Chlorobenzene	-	-	-		Chlorobenzene	Liver	1.8E-003	-	2.4E-002	2.6E-002
	1		Benzo(a)anthracene	9.8E-009	-	1.7E-008	2.7E-008	Benzo(a)anthracene	_		-	-	-
	į	Į	Benzo(b)fluoranthene	1.0E-008	-	1.7E-008	2.7E-008	Benzo(b)fluoranthene	-	-	-	(-	-
	1		Benzo(x)pyrene	9.5E-008	-	1.6E-007	2.6E-007	Benzo(a)pyrene	-	-	-	-	-
	Į.		Indeno(1,2,3-cd)pyrene	8.6E-009	-	1.4E-008	2.3E-008	indeno(1,2,3-od)pyrene	-	-	-	-	-
			1,2,4-Trichlorobenzene	-	-	<u> </u>	-	1,2,4-Trichlorobenzene	Adrenal	1.4E-002	-	1.8E-002	3.2E-002
	1		Aldrin	1.6E-009	-	2.1E-009	3.7E-009	Aktrin	Liver	2.3E-004		3.0E-004	5.3E-004
	1		Aroclar-1248	5.1E-009	-	9.2E-009	1.4E-008	Arocior-1248	-	-	-	-	-
	}	1	Aroclor-1254	1.9E-009	-	3.4E-009	5,3E-009	Aroclor-1254	Immune	3.4E-003	-	6.3E-003	9.7E-003
	. ·	ŀ	Aluminum	-	_	-	-	Akminum	-	1.6E-002	-	2.1E-003	1.8E-002
	\	1	Antimony	-	-	-		Antimony	Whole body/blood	6.3E-003	-	8.4E-004	7.1E-003
	ŀ		Arsenic	3.3E-007	-	1.3E-007	4.0E-007	Arsenic	Skin	5.2E-002	-	2.1E-002	7.3E-002
	1		Manganese	-	-	-	-	Manganese	-	6.7E-003	-	8.9E-004	7.6E-003
	ļ	l.	Theillum	-	-	-		Thellum	Liver/blood	1.9E-002	-	2.5E-003	2.2E-002
	İ	-	Vanadum	-	l -	J '	·	Vanadum	None	7.4E-003	_	9.8E-004	8.4E-003
		l	(Total)	4.8E-007		5.7E-007	1.1E-006	(Total)	1	1.3E-001	-	1.1E-001	2.4E-001
ilding	Building	AOC 4 - ARC	1		I	T			T	I		T .	i
sterials	Materials	İ	Aroctor-1254	1.0E-006	-	1.8E-006	2.8E-006	Arocior-1254	Immune	1.8E+000	-	3.4E+000	5.2E+000
	1	j	2,3,7,8-TCDD equiv.	4.3E-005	-	1.7E-005	8.0E-005	2,3,7,8-TCDD equiv.	-	-	-	-	-
		1	Antimony	l - '		-	_	Antimony	Whole body/blood	9.5E+001	-	1.3E+001	1.1E+002
	1	1	Arsenic	6.5E-006	_	2.5E-006	9.0E-006	Arsenic	Sidn	1.0E+000	۱ -	4.1E-001	1.4E+000
			(Total)	5.1E-005	···	2.1E-005	7.2E-005	1	(Total)	9.8E+001	ļ <u>-</u>	1.6E+001	1.1E+002
					Total Risk Ad			1	Total Hazard Index A		so and All Euro		1.2E+002

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TABLE 9.4.CT SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs CENTRAL TENDENCY EXPOSURE HORSESHOE ROAD COMPLEX SITE, SAYREVILLE, NEW JERSEY

Scenario Timeframe: Future Receptor Population: Construction Workers Receptor Age: Adult

Medium	Exposure Medium	Exposure Paint	Chemical		Cerd	nogeric Risi	k	Chemical		Non-Card	nogeric Hazar	rd Quotiert	
				Ingestion	irhalation	Dermal	Exposure		Primary	Ingestion	irheistion	Dermei	Exposure
							Routes Total	i	Target Organ	I I			Routes Total
Liiding	Building	AOC 4 - ARC		4		: "TEE-HERE							
Viaterials	Materials							Arodor-1254	Immune	3.4E-001	-	6.3E-001	9.7E-001
į								2,3,7,8-TCDD equiv.	_	-	_		_
- 1			·					Antimony	Whale body/blood	2.7E+001	_	3.8E+000	3.1E+001
		-			į			Arseric	Sidn	6.2E-001	-	2.5E-001	8.7E-001
									(Total)	2.8E+001		4.5E+000	3.2E+001

TABLE 10.1.RME RISK ASSESSMENT SUMMARY REASONABLE MAXIMUM EXPOSURE

HORSESHOE ROAD COMPLEX SITE, SAYREVILLE, NEW JERSEY

Scenario Timeframe: Current and Future Receptor Population: Area Residents (Trespassers Receptor Age: Youth (12-17 years)

Medium	Exposure Medium	Exposure Point	Chemical		Can	cinogenic Risk		Chemical		Non-Carc	inogenic Hezai	d Quotient	
				Ingestion	inhalation	Dermal	Exposure Routes Total		Primary Target Organ	ingestion	Inhabition	Demial	Exposure Routes Total
Soft	Surface Solf	AOC 2 - ADC	The second secon		T			The state of the s	2			İ	
1			Arsenic	1.2E-005	<u> </u>	9.5E-006	2.2E-005	Arsenic	Sien	7.3E-001	-	5.5E-001	1.3E+000
1		ľ	(Total)		-	9.5E-006	2.2E-005	(Total)		7.3E-001		5.5E-001	1.3E+000
Building	Building	AOC 2 - ADC				1	A STATE OF THE PARTY OF THE PAR						1
Meterials .	Materials		Benzo(a)anthracene	4.1E-006	-	1.4E-005	1.8E-005	Benzo(a)anthracene	••	-	-	_ '	_
			Benzo(b)fluoranthene	5.2E-006	-	1.7E-005	2.2E-005	Benzo(b)fluoranthene		-		- '	-
ì		+	Benzo(a)pyrene	4.1E-005	-	1.4E-004	1.8E-004	Benzo(a)pyrene	•	-	-	_ '	-
			Indeno(1,2,3-cd)pyrene	1.1E-006	·	3.7E-006	4.8E-006	Indeno(1,2,3-cd)pyrene		-	_	- 1	
1			Olbenzo(a,h)anthracene	3.4E-006	-	1.1E-005	1.4E-005	Dibenzo(a,h)anthracene	•	-	-	!	-
j			Arsenic	6.4E-007	-	4.9E-007	1.1E-006	Arsenic	Slide	1.7E-002	-	1.3E-002	3.0€-002
I			(Total)	5.5E-005	_	1.9E-004	2.4E-004	(Total)		1.7E-002	_	1.3E-002	3.0E-002
Surface Water	Surface Water	AOC 2 - ADC			1	1							1
· [Arsenic	1.8E-006	-	3.3E-008	1.8E-006	Arsenic	Skin	4.7E-002	-	8.6E-004	4.8E-002
			(Total)	1.8E-006	-	3.3E-008	1.8E-006	(Total)		4.7E-002		8.6E-004	4.8E-002
Sediment	Sediment	AOC 2 - ADC				1						1	
1			Benzo(a)pyrene	4.4E-007	-	5.4E-007	9.8E-007	Berizo(a)pyrene		-	-	-	_
			Arsenic	5.2E-005	-	1.5E-005	6.7E-005	Arsenic	Skin	1.4E+000	!	3.8E-001	1.8E+000
i i			(Total)	5.3E-005	-	1.6E-005	6.8E-005	(Total)		1.4E+000	_	3.8E-001	1.8E+000
				# 10 mm	Total Risk A	cross[Media]			Total Hazard Index	Across All Me	dia and Ali Exp	osure Routes	3.1E+000
			Total Risk Acre	ss All Media	and All Expos	sure Routes	3.3E-004	i				'	draft from a trooper

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TABLE 10.1.RME RISK ASSESSMENT SUMMARY REASONABLE MAXIMUM EXPOSURE HORSESHOE ROAD COMPLEX SITE, SAYREVILLE, NEW JERSEY

Scenario Timefrane; Current and Future Receptor Population: Area Residents (Trespassers Receptor Age: Youth (12-17 years)

Soft			ii ii		l .		-			Ì			•		
Soll		1			Ingestion	Inhalation	Dermai	Exposure Routes Total	•		Primary Target Organ	ingestion	inhalation	Dermal	Exposure Routes Total
	Surface Soil	AOC 4 - ARC									ar er a producer en i filosop a eta				(*************************************
			2,3,7,8-TCDD equiv.		1.5E-007	- (1.2E-007	2.7E-007	1						l .
		Ĭ '	Aroclor-1254		2.0E-008	-	7.1E-008	9.1E-008	Aroclor-1254		Immune	5.8E-003	-	2.0E-002	2.6E-002
.		\	Antimony		_	-	-	-	Antimony		Whole body/blood	2.7E-003	-	6.8E-004	3.4E-003
				(Totel)	1.7E-007	_	1.9E-007	3.6E-007			(Total)	8.5E-003	-	2.1E-002	2.9E-002
Building	Building	AOC 4 - ARC				1		42 100 100 100 100 100 100 100 100 100 10							
Viaterials	Materials		Arodor-1254		3.1E-007	-	1.1E-006	1.4E-006	Aroctor-1254		Immune	9.0E-002	-	3.2E-001	4.1E-001
		-	2,3,7,8-TCDD equiv.		1.3E-005	-	1.2E-007	1.3E-005		1					
ļ ·			Antimony			-	- !		Antimony	1	Whole body/blood	4.8E+000	_	1.2E+000	8.0E+000
			ı	(Total)	1.3E-005	-	1.2E-006	1.5E-005			(Total)	4.9E+000	-	1.5E+000	6.4E+000
Surface Water	Surface Water	AOC 4 - ARC													
			Antimony		-	-	-		Antimony		Whole body/blood	6.9E-003	-	1.3E-004	7.0E-003
				(Total)	-	-	-	-		(Total)		6.9E-003	-	1.3E-004	7.0E-003
Sediment	Sediment	AOC 4 - ARC													
		ĺ	Aroclor-1254		1.2E-006	. –	1.5E-006	2.7E-006	Aroclor-1254		Immune	3.5E-001	-	4.4E-001	7.9E-001
• [2,3,7,8-TCDD equiv.		1.2E-007	-	3.4E-008	1.5E-007							
			Antimony			-			Antimony		Whole body/blood	7.8E-003	-	7.2E-004	8.5E-003
				(Total)	1.3E-006		1.5E-006	2.9E-006		(Total)		3.6E-001	-	4.4E-001	8.0E-001
	,					Total Risk A	cross[Media]]		Total Hazard Index	Across Al Me	dia and All Exp	osure Routes	7.2E+000

Total [Whole Body/blood] HI = 6.0E+000 Total [Immune] HI = 1.2E+000

TABLE 10.1.RME SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCS RISK ASSESSMENT SUMMARY HORSESHOE ROAD COMPLEX SITE, SAYREVILLE, NEW JERSEY

Scensrio Timeframe: Current and Future Receptor Population: Area Residents Receptor Age: Youth (12-17 years)

Medium	Exposure Medium	Exposure Point	Chemical		Caro	inogenic Risi	k	Chemical		Non-Card	inogenic Hazar	d Quotient	
				ingestion	Inhalation	Dermei	Exposure		Primary	Ingestion	Inhelation	Dermai	Exposure
Surface Water	Surface Water	AOC 5 - DSM								1			
			Arsenic	2.2E-006		4.0E-008	2.3E-006	Arsenic	Skin	5.7E-002	-	1.0E-003	5.8E-002
			(Total) 2.2E-006	-	4.0E-008	2.3E-006	(Total)	-	5.7E-002	-	1.0E-003	5.9E-002
Sediment	Sediment	AOC 5 - DSM											
			Arsenic	6.0E-005		1.7E-005	7.7E-005	Arsenic	Sidn	1.6E+000	<u> </u>	4.4E-001	2.0E+000
			(Total	6.0E-005		1.7E-005	7.7E-005	(Total)	ļ	1.6E+000	-	4.4E-001	2.1E+000
					Total Risk Ad	cross[Media]	The second control of the second		Total Hazard Index	Across Al Me	edia and All Exp	osure Routes	2.1E+000
			Total Risk Acr	oss All Media	and All Expos	ure Routes	7.9E-005						

Total (Skin) HI = 2.1E+000

TABLE 10.1.RME RISK ASSESSMENT SUMMARY REASONABLE MAXIMUM EXPOSURE HORSESHOE ROAD COMPLEX SITE, SAYREVILLE, NEW JERSEY

Scenario Timeframe: Current and Puture Receptor Population: Area Residents Receptor Age: Youth (12-17 years)

Medium	Exposure Medium	Exposure Point		Chemical		Can	cinogenic Risi	k	Cher	micel		Non-Card	nogenic Hazar	d Quotient	
					ingestion	Inhalation	Dermal	Exposure Routes Total			Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Water	Surface Water	AOC 6 - RR	1				İ	1						-	1
1		1	Arsenic		7.8E-008	-	1.4E-009	7.9E-008	Arsenic		Skin	2.0E-003		3.7E-005	2.0E-003
		1		(Total)	7.8E-008	-	1.4E-009	7.9E-008	1	(Total)		5.0E-003		9.2E-005	5.1E-003
Sediment	Sedment	AOC 6 - RR					l								
1			Arsenic		3.3E-005	-	9.3E-006	4.2E-005	Arsenic		Skin	8.8E-001	-	2.4E-001	1.1E+000
i			1	(Total)	3.3E-005		9.3E-006	4.2E-005	1	(Total)		8.8E-001		2.4E-001	1.1E+000
	***************************************					Total Risk A	cross[Media]		1		Total Hazard Index	Across Al Me	dia and All Exp	osure Routes	1.1E+000
				Total Risk Acro	ss Al Media	and All Expos	sure Routes	4.2E-005	1						

400412

TABLE 10.2a.RME RISK ASSESSMENT SUMMARY REASONABLE MAXIMUM EXPOSURE HORSESHOE ROAD COMPLEX SITE, SAYREVILLE, NEW JERSEY

Scenario Timeframe: Current and Future Receptor Population: Residents Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical			Carc	inogenic Ris	k	Chemical	İ		Non-Carci	nogenic Hazar	d Quotient	
					Ingestion	Inhalation	Dermal	Exposure	l		Primary	Ingestion	Inhalation	Dermal	Exposure
Surface Water	Shellfish	AOC 5 - DSM					1	The second secon							
(ļ	Arsenic		1.2E-008	-		1.2E-008	Arsenic		Skin	7.4E-006	-	_	7.4E-006
				(Total)	1.2E-008	-		1.2E-008		(Total)		7.4E-006	-	-	7.4E-006
Surface Water	Surface Water	AOC 5 - DSM				I									
			Arsenic		3.5E-005	-	1.6E-005	5.1E-005	Arsenic		Skin	2.3E-001		1.1E-001	3.4E-001
				(Total)	3.5E-005	1	1.6E-005	5.1E-005		(Total)		2.3E-001		1.1E-001	3.4E-001
Sediment	Sediment	AOC 5 - DSM	Frank Frank Filters at 1												
e i	·		Arsenic		1.9E-004		1.5E-004	3.4E-004	Arsenic		Skin	1.3E+000	~	9.7E-001	2.2E+000
				(Total)	1.9E-004	-	1.5E-004	3.4E-004	1	(Total)		1.3E+000	-	9.7E-001	2.2E+000
	The second secon	The second secon	Water and the second		7	otal Risk Ac	ross[Media]			Tol	al Hazard Index A	cross All Medi	a and All Expo	sure Routes	2.6E+000
			Total Risk	Across	All Media ar	nd All Exposi	ure Routes	3.9E-004	il					•	215 1172

Total (Skin) HI = 2.6E+000

TABLE 10.2a.RME RISK ASSESSMENT SUMMARY REASONABLE MAXIMUM EXPOSURE HORSESHOE ROAD COMPLEX SITE, SAYREVILLE, NEW JERSEY

Scenario Timeframe: Current and Future Receptor Population: Residents Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical		Caro	inogenic Ris	k	Chemical		Non-Carci	nogenic Hazar	d Quotient	
				Ingestion	Inhalation	Dermal	Exposure		Primary	Ingestion	Inhalation	Dermal	Exposure
						<u> </u>	Routes Total		Target Organ				Routes Total
Surface Water	Shellfish	AOC 6 - RR											
		1	Arsenic	4.1E-010		-	4.1E-010	Arsenic	Skin	2.6E-007	-	-	2.6E-007
			(Tote	i) 4.1E-010	†···-	_	4.1E-010	(Total)		2.6E-007			2.6E-007
Surface Water	Surface Water	AOC 6 - RR								1			
			Arsenic	1.2E-006	-	5.7E-007	1.8E-006	Arsenic	Skin	8.0E-003		3.7E-003	1.2E-002
			(Tota	1.2E-008	†····-	5.7E-007	1.8E-006	(Total)		8.0E-003		3.7E-003	1.2E-002
Sediment	Sediment	AOC 6 - RR											
. [Arsenic	1.1E-004	-	8.0E-005	1.9E-004	Arsenic	Skin	6.9E-001	_	5.3E-001	1.2E+000
			(Tota	I) 1.1E-004		8.0E-005	1.9E-004	(Total)		6.9E-001	_	5.3E-001	1.2E+000
					Total Risk Ad	ross[Media]		To	tal Hazard Index Ac	ross All Medi	a and All Expo	sure Routes	1.2E+000
			Total Risk Acros	s All Media a	nd All Expos	ure Routes	1.9E-004						

TABLE 10 2b.RME RISK ASSESSMENT SUMMARY REASONABLE MAXIMUM EXPOSURE HORSESHOE ROAD COMPLEX SITE, SAYREVILLE, NEW JERSEY

Scenario Timeframe: Future Receptor Population: Residents Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical	-	Carc	inogenic Ris	k	Chemical		Non-Carci	nogenic Hazai	rd Quotient	
				Ingestion	Inhalation	Dermal	Exposure		Primary	Ingestion	Inhalation	Dermal	Exposure
Surface Water	Surface Water	AOC 5 - DSM				I				1	was de de la company		
			Arsenic	4.2E-005	-	6.7E-006	4.8E-005	Arsenic	Skin	1.1E+000	-	1.7E-001	1.3E+000
			(Total)	4.2E-005	-	6.7E-006	4.8E-005	(Total)		1.1E+000	~	1.7E-001	1.3E+000
Sediment	Sediment	AOC 5 - DSM			}								
			Arsenic	4.5E-004	_	1.1E-004	5.6E-004	Arsenic	Skin	1.2E+001	_	2.8E+000	1.5E+001
.				4.5E-004		1.1E-004	5.6E-004	(Total)	1	1.2E+001	-	2.8E+000	1.5E+001
	A CANADA TO THE RESIDENCE OF THE PARTY OF TH			1	otal Risk Ac	ross[Media]	To a paging your state and a substitute of the s	To	ital Hazard Index A	cross All Medi	a and All Expo	sure Routes	1.6E+001
			Total Risk Across	All Media a	nd All Exposi	ure Routes	6.1E-004						

1.6E+001 Total (Skin) HI =

TABLE 10.2b.CT RISK ASSESSMENT SUMMARY CENTRAL TENDENCY EXPOSURE HORSESHOE ROAD COMPLEX SITE, SAYREVILLE, NEW JERSEY

Scenario Timeframe; Future Receptor Population: Residents

Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical		Carc	inogenic Ris	k	Chemical		Non-Carci	nogenic Hazar	d Quotient	
				Ingestion	Inhalation	Dermal	Exposure		Primary	Ingestion	Inhalation	Dermal	Exposure
							Routes Total		Target Organ				Routes Total
Sediment	Sediment	AOC 5 - DSM		1									
			Arsenic	2.2E-004	-	5.2E-005		Arsenic	Skin	5.6E+000		1.3E+000	6.9E+000
	_		(Total)	2.2E-004	-	5.2E-005	2.7E-004	(Total)		5.6E+000	-	1.3E+000	6.9E+000

TABLE 10.25.RME RISK ASSESSMENT SUMMARY REASONABLE MAXIMUM EXPOSURE

Receptor Population: Residents Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical		Carc	inogenic Ris	k	Chemical		Non-Carci	nogenic Haza	ti Quotient	
-	٠			Ingestion	Inhalation	Dermal	Exposure	1	Primary	Ingestion	Inhalation	Dermai	Exposure
						<u> </u>	Routes Total		Target Organ				Routes Total
Surface Water	Surface Water	AOC 6 - RR			[]	A STATE OF THE PARTY OF THE PAR	\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\					
			Arsenic	1.2E-006	-	5.7E-007	1.8E-006	Arsenic	Skin	8.0E-003	-	3.7E-003	1.2E-002
			(Total)	1.2E-006		5.7E-007	1.8E-006	(Total)		8.0E-003		3.7E-003	1.2E-002
Sediment	Sediment	AOC 6 - RR			Ī								
1	-		Arsenic	2.5E-004	-	5.9E-005	3.1E-004	Arsenic	Skin	6.5E+000		1.5E+000	8.0E+000
			(Total)	2.5E-004		5.9E-005	3.1E-004	(Total)		6.5E+000	-	1.5E+000	8.0E+000
		y a garante and a company of the second of t		1	otal Risk Ac	ross{Media}			tal Hazard Index Ad	ross All Medi	a and All Expo	sure Routes	8.0E+000
			Total Risk Across	All Media ar	nd All Exposi	ure Routes	3.1E-004]					

Total [Skin] HI = 8.0E+000

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TABLE 10.2b.CT RISK ASSESSMENT SUMMARY CENTRAL TENDENCY EXPOSURE HORSESHOE ROAD COMPLEX SITE, SAYREVILLE, NEW JERSEY

Scenario Timeframe: Future Receptor Population: Residents Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical		Carc	inogenic Ris	k	Chemical		Non-Carci	nogenic Hazar		
				Ingestion	Inhalation	Dermal	Exposure		Primary	Ingestion	Inhalation	Dermai	Exposure
#							Routes Total		Target Organ	İ			Routes Total
Sediment	Sediment	AOC 6 - RR											
	İ							Arsenic	Skin	1.3E+000		3.2E-001	1.7E+000
	<u> </u>							(Total)		1.3E+000		3.3E-001	1.7E+000

TABLE 10.3.RME

RISK ASSESSMENT SUMMARY

REASONABLE MAXIMUM EXPOSURE

HORSESHOE ROAD COMPLEX SITE, SAYREVILLE, NEW JERSEY

Scenario Timeframe: Future Receptor Population: Site Workers Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical			Carc	inogenic Risi		Chemica	it		Non-Carcia	nogenic Hazar	d Quotient	
					Ingestion	Inhalation	Dermai	Exposure Routes Total			Primary Target Organ	Ingestion	Inhalation	Dermai	Exposure Routes Total
Soil	Surface Soil	AOC 1 - HRDD				1	t								
			Aroclor-1248	i	3.4E-008	l _	5.3E-005	5.6E-005	Aroctor-1248			_		_	-
			Aroclor-1254		3.1E-007	_	4.8E-008	5.1E-008	Arocior-1254		Immune	2.1E-002	_	3.4E-001	3.6E-001
			Aroclor-1260		2.6E-007	-	4.0E-006	4.3E-008	Aroclor-1260		_	_	_	-	
	,		Arsenic		1.4E-005	-	4.8E-005	6.2E-005	Arsenic		Skin	8.7E-002	· _	3.0E-001	3.9E-001
				(Total)	1.8E-005	†····-	1.1E-004	1.3E-004	.	(Total)		1.1E-001	~	6.4E-001	7.5E-001
Soit	Subsurface Soil	AOC 1 - HRDD							1						
			Aroclor-1248		4.7E-007	-	7.3E-006	7.8E-006	Aroclar-1248		_	-	_		_
	-		Aroclor-1254		3.5E-008	-	5.4E-007	5.8E-007	Aroclor-1254		Immune	2.4E-003	-	3.8E-002	4.0E-002
			Aroclor-1260		1.1E-008	-	1.7E-005	1.8E-005	Aroctor-1260		-	- 1	-	-	_
1			Arsenic		6.6E-008	-	2.2E-005	2.9E-005	Arsenic		Skin	4.0E-002	-	1.4E-001	1.8E-001
				(Total)	8.2E-008	†····-	4.7E-005	5.5E-005	 	(Total)		4.2E-002	-	1.8E-001	2.2E-001
Soil	Test Pit Soil	AOC 1 - HRDD													
			Aroclor-1248		1.5E-005	-	2.3E-004	2.5E-004	Aroclor-1248		-	- 1	_ `	_	-
· l			Aroclor-1254		2.2E-006	-	3.5E-005	3.7E-005	Aroclor-1254		Immune	1.5E-001	-	2.5E+000	2.7E+000
			Antimony		-	-	-	-	Antimony		Whole body/blood	1.6E+000	-	1:9E+000	3.5E+000
			Arsenic		1.9E-004	-	6.4E-004	8.3E-004	Arsenic		Skin	1.2E+000	<u>-</u>	4.0E+000	5.2E+000
				(Total)	2.1E-004	L -	9.1E-004	1.1E-003	Ι	(Total)		2.9E+000	-	8.4E+000	1.1E+001

Total [Skin] HI = | 5.8E+000

Total [immune] HI = | 3.1E+000

Total (Whole Body/Blood) HI = | 3.5E+000

TABLE 10.3.RME RISK ASSESSMENT SUMMARY REASONABLE MAXIMUM EXPOSURE HORSESHOE ROAD COMPLEX SITE, SAYREVILLE, NEW JERSEY

Scenario Timeframe: Future Receptor Population: Site Workers Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical		Carc	inogenic Risk		Chemical		Non-Carci	nogenic Hazar	d Quotient	
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	AOC 2 - ADC			1		The second secon						
	ļ.		Benzo(a)anthracene	2.8E-007	_	4.0E-005	4.0E-005	Benzo(a)anthracene	-	-		-	
			Benzo(b)fluoranthene	3.9E-006	-	5.7E-005	6.1E-005	Benzo(b)fluoranthene	_	-	-		
			Benzo(a)pyrene	2.6E-005	-	3.8E-004	4.1E-004	Benzo(a)pyrene		-	-	-	- :
			Indeno(1,2,3-cd)pyrene	1.6E-006	-	2.3E-005	2.5E-005	Indeno(1,2,3-cd)pyrene	-	-	-	-	_
			Dibenzo(a,h)anthracene	3.0E-006	-	4.4E-005	4.7E-005	Dibenzo(a,h)anthracene	-	-	-	-	_
			Methoxychlor	-	1 -	-	· -	Methoxychlor	Reproductive	9.6E-002	-	1.1E+000	1.2E+000
			Aroclor-1248	1.2E-005		1.9E-004	2.0E-004	Aroclor-1248	-	_	-		-
	Į.		Aroctor-1260	9.0E-007	-	1.4E-005	1.5E-005	Aroclor-1280	-	-	-		_
			Arsenic	4.4E-004	l -	1.5E-006	4.4E-004	Arsenic	Skin ·	5.9E+000		2.1E+001	2.7E+001
		Į.	(Tota) 4.9E-004		7.5E-004	1.2E-003	(Total)		6.0E+000	-	2.2E+001	2.8E+001
Soil	Subsurface Soil	AOC 2 - ADC	1,2-Dichloroethane	6.4E-008	-	7.1E-004	7.2E-004	1,2-Dichloroethane		6.4E-003		7.4E-001	7.5E-001
		ļ	Benzo(b)fluoranthene	4.1E-007	_	6.0E-006	6.4E-006	Benzo(b)fluoranthene	_	-	_	_	
	•		Benzo(a)pyrene	6.2E-006	-	8.9E-005	9.5E-005	Benzo(a)pyrene	~	-	-		_
			Methoxychlor	-	-	-	-	Methoxychlor	Reproductive	7.4E-002	-	8.7E-001	9.4E-001
			Aroclor-1242	3.8E-006	-	5.9E-005	6.3E-005	Aroclor-1242	-	-		-	-
			Aroclor-1248	2.7E-005	-	4.1E-004	4.4E-004	Aroctor-1248	_	-	_	-	_
			Arsenic	2.2E-004	-	7.5E-004	9.7E-004	Arsenic	Skin	1.4E+000	_	4.7E+000	8.1E+000
			(Tota	2.6E-004	1 -	2.0E-003	2.3E-003	(Total)		1.4E+000	-	4.9E+000	7.8E+000
Building	Building	AOC 2 - ADC			1			**************************************	** * ******* * * * * ***** * *				
Materials	Materials		Benzo(a)anthracene	1.4E-004		2.1E-003	2.2E-003	Benzo(a)anthracene	_	-	-	_	_
	Ī		Benzo(b)fluoranthene	1.8E-004	-	2.7E-003	2.9E-003	Benzo(b)fluoranthene	_	-	-	_	
		ļ.	Benzo(a)pyrene	1.4E-003	-	2.1E-002	2.2E-002	Benzo(a)pyrene	_	-	-		-
		į .	Indeno(1,2,3-cd)pyrene	3.9E-005	i -	5.7E-004	6.1E-004	Indeno(1,2,3-cd)pyrene	_	-	· -	_	-
	1	1	Dibenzo(a,h)anthracene	1.2E-004	-	1.7E-003	1.8E-003	Dibenzo(s,h)anthracene	-	-	-	-	-
			Fluoranthene	-	ļ <u>-</u>	-	· —	Fluoranthene	Kidney/liver	4.8E-002	-	7.2E-001	7.7E-001
	1	1	Pyrene	-	-	-	. –	Pyrene	Kidney	4.6E-002	-	6.9E-001	7.4E-001
		1	Methoxychlor	-	-	-		Methoxychior	Reproductive	1.5E-002	_	1.7E-001	1.9E-001
			Arsenic	2.3E-005	-	7.6E-005	9.9E-005	Arsenic	Skin	1.4E-001	_	4.8E-001	6.2E-001
		1	(Tota	1.9E-003	1 -	2.8E-002	3.0E-002	(Total)		2.2E-001	-	1.7E+000	1.9E+000
7/4/31 / N.S. 15	**************************************		The state of the s		rotal Risk Ac	ross[Media]		Tot	al Hazard Index Ac	ross All Medi	a and All Expo	sure Routes	3.8E+001

Total [Skin] HI = | 3.4E+001 Total [Kidney] HI = | 1.5E+000 Total [Reproductive] HI = | 2.3E+000

TABLE 10.3.CT RISK ASSESSMENT SUMMARY CENTRAL TENDENCY EXPOSURE HORSESHOE ROAD COMPLEX SITE, SAYREVILLE, NEW JERSEY

Scenario Timeframe: Euture Receptor Population: Site Workers Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical		Caro	inogenic Ris	k	Chemical		Non-Carci	nogenic Hazar	d Quotient	
-				Ingestion	inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Building	Building	AOC 2 - ADC	A CONTRACTOR OF THE CONTRACTOR	1	1							The second second second	
Materials	Materials		Benzo(a)anthracene	7.9E-006		2.1E-004	2.1E-004					8 ·	
1			Benzo(b)fluoranthene	9.1E-006	-	2.4E-004	2.4E-004						-
			Benzo(a)pyrene	7.2E-005	-	1.9E-003	1.9E-003						
			Indeno(1,2,3-cd)pyrene	2.5E-008	-	6.6E-005	6.9E-005						-
			Dibenzo(a,h)anthracene	7.1E-006	-	1.9E-004	2.0E-004			1			
			Fluoranthene	_	-	_	-						
			Pyrene	-	-	- 1	_	2	<u> </u>				
			Methoxychior	-	-	_	. –						
		1	Arsenic	1.6E-006	-	9.7E-005	9.9E-005		1				
			(Tota) 1.0E-004	1	2.6E-003	2.7E-003			l			

TABLE 10.3 RME RISK ASSESSMENT SUMMARY REASONABLE MAXIMUM EXPOSURE HORSESHOE ROAD COMPLEX SITE, SAYREVILLE, NEW JERSEY

Scenario Timeframe: Future Receptor Population: Site Workers Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical		Carc	inogenic Risl	k .	Chemical		Non-Carcii	nogenic Hazar	d Quotient	
·				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	AOC 3 - SPD											
			Benzo(a)anthracene	2.2E-007	-	3.2E-006	3.4E-006	Berizo(a)anthracene		-		1	·
			Benzo(b)fluoranthene	3.8E-007	-	5.5E-006	5.9E-006	Benzo(b)fluoranthene	-	-		-	· -
			Benzo(a)pyrene	1.9E-006		2.8E-005	3.0E-005	Вепzо(а)ругепе		-		(- I	-
			Indeno(1,2,3-cd)pyrene	1.7E-007	-	2.5E-006	2.7E-006	Indeno(1,2,3-cd)pyrene				-	
			Arsenic	6.5E-006	-	2.2E-005	2.9E-005	Arsenic	Skin	3.9E-002		1.4E-001	1.8E-001
			(Total)	9.2E-006		6.1E-005	7.0E-005	(Total)		3.9E-002		1.4E-001	1.8E-001
Soil	Subsurface Soil	AOC 3 - SPD											
			Benzo(a)pyrene	1.2E-007	-	1.8E-006	1.9E-006	Benzo(a)pyrene	-	-	-	-	- .
			Aroclor-1254	5.9E-008	-	9.2E-007	9.8E-007	Aroclor-1254	Immune	4.0E-003	-	6.5E-002	6.9E-002
			Aroclor-1260	6.3E-008	-	9.9E-007	1.1E-006	Aroclor-1260		-	-	-	-
			Arsenic	7.8E-006		2.6E-005	3.4E-005	Arsenic	Skin	4.7E-002		1.7E-001	2.2E-001
			(Total)	8.0E-006	-	3.0E-005	3.8E-005	(Total)		5.1E-002		2.4E-001	2.9E-001
Soil	Test Pit Soil	AOC 3 - SPD										71.12	
			Hexachloroethane	2.6E-005	-	2.9E-004	3.2E-004	Hexachloroethane	Kidney	5.0E+000	-	5.8E+001	6.3E+001
			Benzo(a)pyrene	6.2E-006	-	8.9E-005	9.5E-005	Benzo(a)pyrene			-	()	-
			Dibenzo(a,h)anthracene	1.2E-006		1.7E-005	1.2E-006	Dibenzo(a,h)anthracene		-		- 1	i -
			Aroclor-1248	7.6E-006	-	1.2E-004	1.3E-004	Aroclor-1248	-	-	-) - I	i
			Aroclor-1254	2.2E-006		3.4E-005	3.6E-005	Aroclor-1254	immune	1.5E-001	-	2.4E+000	2.6E+000
		1	Arsenic	2.1E-005		6.9E-005	9.0E-005	Arsenic	Skin	1.3E-001		4.4E-001	5 7E-001
			(Total)	6.4E-005		6.2E-004	6.8E-004	(Total)		5.3E+000		8.1E+001	6.6E+001
***************************************				7	otal Risk Ac	ross[Media]		Tot	al Hazard Index Ac	ross All Medi	a and All Expo	sure Routes	6.7E+001

Total Risk Across All Media and All Exposure Routes 7.9E-004

Total (Skin) HI = 9.7E-001 6.3E+001 Total [Kidney] HI = 2.6E+000 Total [Immune] HI =

TABLE 10.3.RME RISK ASSESSMENT SUMMARY REASONABLE MAXIMUM EXPOSURE HORSESHOE ROAD COMPLEX SITE, SAYREVILLE, NEW JERSEY

Scenario Timeframe: Future Receptor Population: Site Workers Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical		Carc	inogenic Risk		Chemical		Non-Carcii	nogenic Hazar	d Quotient	
				Ingestion	Inhalation	Dermal	Exposure		Primary	Ingestion	Inhalation	Dermai	Exposure
				1	1	1	Routes Total		Target Organ				Routes Tota
Soil	Surface Soil	AOC 4 - ARC			1	1							
			Aroclor-1248	3.2E-007	_	5.0E-008	5.3E-006	Aroclor-1248	_		_	_	_
			Aroclor-1254	7.0E-007	-	1.1E-005	1.26-005	Aroclor-1254	Immune	4.8E-002	-	7.7E-001	8.2E-001
			Aroclar-1260	1.7E-007	_	2.6E-006	2.8E-006	Aroclor-1260	-	-	-	-	_
-		Ì	Antimony	_	_	-	_	Antimony	Whole body/blood	2.2E-002		2.6E-002	4.8E-002
			Arsenic	7.3E-006	-	2.4E-005	3.1E-005	Arsenic	Skin	4.4E-002	-	1.5E-001	1.9E-001
	·		(Total)	8.5E-006	<u> </u>	4.3E-005	5.1E-005		(Total)	1.1E-001		9.5E-001	1.1E+000
Soil	Subsurface Soil	AOC 4 - ARC		0.0.2.000									
							0 05 007	1040					
			Aroclor-1248	5.4E-008	-	8.3E-007	8.8E-007	Aroclor-1248	-	4 45 000	-	2 22 222	0.05.000
			Aroclor-1254	2.0E-008	-	3.1E-007	3.3E-007	Aroclor-1254	Immune	1.4E-003	-	2.2E-002	2.3E-002
			Antimony	-	-	4 05 005	-	Antimony	Whole body/blood	2.6E-003	-	3.0E-003	5.6E-003
·			Arsenic	3.5E-008	ļ <u>-</u>	1.2E-005	1.6E-005	Arsenic	Skin	2.1E-002	-	7.4E-002	9.5E-002
			(Total)	3.6E-006	ļ -	1.3E-005	1.7E-005	(Total)		2.5E-002		9.9E-002	1.2E-001
Building	Building	AOC 4 - ARC											
Vaterials	Materials		Aroclor-1254	1.1E-005	- '	1.7E-004	1.8E-004	Aroclor-1254	Immune	7.4E-001	-	1.2E+001	1.3E+001
			2,3,7,8-TCDD equiv.	4.6E-004	-	1.5E-003	2.0E-003	2,3,7,8-TCDD equiv.		-	-		-
			Antimony	-	-	-		Antimony	Whole body/blood	3.9E+001		4.5E+001	8.4E+001
		ĺ	Arsenic	6.9E-005	ļ <u>-</u>	2.3E-004	3.0E-004	Arsenic	Skin	4.1E-001		1.4E+000	1.8E+000
			(Total)	5.4E-004	l <u> </u>	1.9E-003	2.5E-003]	(Total)	4.0E+001		5.8E+001	9.9E+001

Total [Skin] Hi = 2.3€+000

Total [Whole Body/blood] Hi = 8.4€+001

Total [Immune] Hi = 1.4€+001

TABLE 10.3.CT RISK ASSESSMENT SUMMARY CENTRAL TENDENCY EXPOSURE HORSESHOE ROAD COMPLEX SITE, SAYREVILLE, NEW JERSEY

Scenario Timeframe: Future Receptor Population: Site Workers Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical		err - Artinage		inogenic Ris	k	Chemical			nogenic Hazaı		
				Ing	gestion	Inhalation	Dermal	Exposure		Primary	Ingestion	Inhalation	Dermal	Exposure
	l	L						Routes Total		Target Organ	I		-,,-,,-,-	Routes Total
Building	Building	AOC 4 - ARC	ų:	{						.	1			
Materials	Materials		Aroclor-1254	2.6	3E-007		7.4E-006	7.7E-008	Aroclor-1254	Immune	5.6E-002	-	1.4E+000	1.5E+000
	·		2,3,7,8-TCDD equiv.	1.1	1E-005		6.8E-005	7.9E-005	2,3,7,8-TCDD equiv.	-	-	-		
			Antimony		- 1	-	-	-	Antimony	Whole body/blood	4.5E+000	-	8.1E+000	1.3E+001
			Arsenic	1	3E-006	-	3.3E-005	3.8E-005	Arsenic	Skin	1.0E-001	-	5.6E-001	6.6E-001
					7E-005	_	1.1E-004	1.2E-004		(Total)	4.7E+000	-	1.0E+001	1.5E+001

TABLE 10.4.RME

RISK ASSESSMENT SUMMARY

REASONABLE MAXIMUM EXPOSURE

HORSESHOE ROAD COMPLEX SITE, SAYREVILLE, NEW JERSEY

Scenario Timeframe: Future Receptor Population: Construction Workers Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical			Carc	inogenic Risk	Į.	Chemica	l .		Non-Carcii	nogenic Hazar	d Quotient	
					Ingestion	Inhafation	Dermal	Exposure Routes Total			Primary Target Organ	Ingestion	Inhalation	Dermai	Exposure Routes Total
Soil	Surface Soil	AOC 1 - HRDD		T						1000 and 1000 and 1000 and 1000 and 1000 and 1000 and 1000 and 1000 and 1000 and 1000 and 1000 and 1000 and 100		7 11 V. 10 27 11 12 14 14 14 14 14 14 14 14 14 14 14 14 14			
			Aroclor-1248	\ :	3.2E-007	- 1	5.9E-007	9.1E-007	Arocior-1248		_	-	_	_	-
			Aroclor-1254	- 1:	2.9E-008		5.2E-008	8.1E-008	Aroclor-1254		Immune	5.1E-002	_	9.5E-002	1.5E-001
	į		Aroclor-1260	- 1:	2.4E-008		4.4E-008	6.8E-008	Aroclor-1260			-	_	-	· _
			Arsenic		1.4E-006	-	5.2E-007	1.9E-006	Arsenic		Skin	2.1E-001	_	8.5E-002	3.0E-001
				(Total)	1.8E-006		1.2E-006	3.0E-006	·¶	(Total)		2.6E-001		1.8E-001	4.4E-001
Soil	Subsurface Soil	AOC 1 - HRDD		- : :											
	·	Ì	Aroclor-1248	- j.	4.4E-008		8.0E-008	1.2E-007	Aroclor-1248		_	-	-	_	
			Aroclor-1254	- 1:	3.3E-009		5.9E-009	9.2E-009	Aroclor-1254		Immune	5.8E-003	-	1.1E-002	1.7E-002
	}		Aroctor-1260	· .	1.1E-007	-	1.9E-007	3.0E-007	Aroctor-1260		-	-	-	<u> </u>	
			Arsenic	-	6.2E-007	-	2.4E-007	8.6E-007	Arsenic		Skin	9.8E-002	-	3.9E-002	1.4E-001
			1	(Total)	7.8E-007		5.2E-007	1.3E-006	1	(Total)		1.0E-001	-	5.0E-002	1.5E-001
Soil	Test Pit Soil	AOC 1 - HRDD				1	ii								
			Aroclor-1248	}	1.4E-008	-	2.5E-008	3.9E-006	Aroclor-1248		-		-	-	
			Aroclor-1254	- 1:	2.1E-007	_	3.8E-007	5.9E-007	Aroclor-1254		Immune	3.7E-001		6.9E-001	1.1E+000
	<u>}</u> :		Antimony	- 1	_	_	-	-	Antimony		Whole body/blood	3.9E+000	-	5.2E-001	4.4E+000
		1	Arsenic	- [1.8E-005	-	7.0E-006	2.5E-005	Arsenic		Skin	2.8E+000		1.1E+000	3.9E+000
				(Total)	2.DE-005		1.0E-005	3.0E-005]	(Total)		7.1E+000		2.3E+000	9.5E+000
			The second secon		1	otal Risk Ac	ross[Media]]	To	tal Hazard Index Acr	oss All Medi	a and All Expo	sure Routes	1.0E+001
			Total Risk A	cross A	II Media ar	nd All Expose	ure Routes	3.4E-005	T.						

Total [Skin] HI = 4.3E+000

Total [Immune] HI = 1.2E+000

Total [Whole Body/Blood] HI = 4.4E+000

TABLE 10.4.RME RISK ASSESSMENT SUMMARY REASONABLE MAXIMUM EXPOSURE HORSESHOE ROAD COMPLEX SITE, SAYREVILLE, NEW JERSEY

Scenario Timeframe: Future Receptor Population: Construction Workers Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	· u .		Carc	inogenic Risk		Chemical	Non-Carcinogenic Hazard Quotient					
	n			Ingestion	Inhalation	Dermai	Exposure Routes Total		Primary Target Organ	Ingestion	inhalation	Dermal	Exposure Routes Tota	
ioil	Surface Soil	AOC 2 - ADC		***************************************	i	1	TENERAL COLOR OF		alan di Tarin Esperalenti de	1			torr on introdu	
			Benzo(a)anthracene	2.6E-007	-	4.4E-007	7.0E-007	Benzo(a)anthracene	***	-	-	-		
			Benzo(b)fluoranthene	3.7E-007	-	6.3E-007	1.0E-006	Benzo(b)fluoranthene	-	-	-	- '	-	
			Benzo(a)pyrene	2.5E-006	-	4.2E-006	6.7E-006	Benzo(a)pyrene	_	-	-	-	-	
			Indeno(1,2,3-cd)pyrene	1.5E-007	-	2.5E-007	4.0E-007	Indeno(1,2,3-cd)pyrene	_	-	-	- 1	_	
		•	Dibenzo(a,h)anthracene	2.9E-007	-	4.8E-007	7.7E-007	Dibenzo(a,h)anthracene	-	-		-	-	
			Methoxychlor	_		- 1	- .	Methoxychlor	Reproductive	2.4E-001	- :	4.4E-001	6.8E-001	
		٠	Arsenic	4,1E-005	l -	1.6E-008	4.1E-005	Arsenic	Skin	1.5E+001	_	5.8E+000	2.1E+001	
			(Total)	4.5E-005	†····-	8.0E-006	5.1E-005	(Total)		1,5E+001		6.2E+000	2.1E+001	
oil	Subsurface Soil	AOC 2 - ADC												
			Benzo(b)fluoranthene	3.9E-008	_	6.6E-008	1.1E-007	Benzo(b)fluoranthene	_	-	_		-	
			Benzo(a)pyrene	5.8E-007	-	9.8E-007	1.6E-006	Benzo(a)pyrene	_	1 - 1	-		-	
			Methoxychlor	-	-	-	_	Methoxychlor	Reproductive	1.8E-001	-	2.4E-001	4.2E-001	
			Arsenic	2.1E-005	-	8.2E-006	2.9E-005	Arsenic	Skin	3.3E+000			4.6E+000	
			(Total)	2.2E-005	† <u>-</u>	9.2E-008	3.1E-005	(Total)		3.5E+000		1.5E+000	5.0E+000	
uilding	Building	AOC 2 - ADC			İ	a management								
laterials	Materials		Benzo(a)anthracene	1.4E-005	-	2.3E-005	3.7E-005	Benzo(a)anthracene	-	- !		-	-	
			Benzo(b)fluoranthene	1.7E-005	-	2.9E-005	4.6E-005	Benzo(b)fluoranthene	-	-		-		
			Benzo(a)pyrene	1.4E-004	-	2.3E-004	3.7E-004	Benzo(a)pyrene	-	-	-	4.4E-001 5.8E+000 6.2E+000 	-	
			Indeno(1,2,3-cd)pyrene	3.7E-006	-	6.3E-006	1.0E-005	Indeno(1,2,3-cd)pyrene		-	-	_	-	
			Dibenzo(a,h)anthracene	1.1E-005	-	1.9E-005	3.0E-005	Dibenzo(a,h)anthracene	-	-	-	-	-	
			Methoxychlor	-	_	-		Methoxychior	Reproductive	3.6E-002	-	3.6E-003	4.0E-002	
			Arsenic	2.1E-006	-	8.3E-007	2.9E-006	Arsenic	Skin	3.4E-001	- '	1.0E-002	3.5E-001	
			(Total)	1.9E-004	†····-	3.1E-004	5.0E-004	(Total)		3.8E-001	-	1.4E-002	3.9E-001	
				1	otal Risk Ad	ross[Media]		Tota	al Hazard Index Ac	ross All Medi	a and All Expo	sure Routes	2.7E+001	
			Total Risk Across	All Media ar	nd All Expos	ure Routes	5.8E-004	1				.1	torner somet	

Total [Reproductive] HI = 1.1E+000

TABLE 10.4.CT RISK ASSESSMENT SUMMARY CENTRAL TENDENCY EXPOSURE HORSESHOE ROAD COMPLEX SITE, SAYREVILLE, NEW JERSEY

Scenario Timeframe: Future Receptor Population: Construction Workers Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient						
			l .	ingestion	Inhalation	Dermal	Exposure		Primary	Ingestion	Inhalation	Dermal	Exposure		
				İ	<u></u>		Routes Total		Target Organ				Routes Total		
Building	Building	AOC 2 - ADC			1			The second secon	1				11.1		
Materials	Materials		Benzo(a)anthracene	5.8E-006		9.8E-006	1.6E-005						-		
		}	Benzo(b)fluoranthene	6.7E-008	-	1.1E-005	1.8E-005		}						
			Benzo(a)pyrene	5.3E-005	-	8.9E-005	1.4E-004								
			Indeno(1,2,3-cd)pyrene	1.8E-006	-	3.1E-005	3.3E-005		1	1					
	-		Dibenzo(a,h)anthracene	5.3E-006	-	8.9E-006	1.4E-005			1					
			Methoxychlor	_	-	_									
		1	Arsenic	1.2E-006	-	4.8E-007	1.7E-008								
1			(Total		 	1.2E-004	2.0E-004								

TABLE 10.4.RME RISK ASSESSMENT SUMMARY REASONABLE MAXIMUM EXPOSURE HORSESHOE ROAD COMPLEX SITE, SAYREVILLE, NEW JERSEY

Scenario Timeframe: Future Receptor Pepulation; Construction Workers Receptor Age: Aduft

	_	_			_										
Medium	Exposure	Exposure	Chemical	Carcinogenic Risk				Chemical	Non-Cercinogenie Hazard Quetient						
	Medium	Point							1						
	į.			ingestion	Inhalation	Dermal	Exposure		Primary	Ingestion	Inhalation	Dermal	Exposure		
							Routes Total		Target Organ				Routes Total		
Soil	Test Pit Soil	AOC 3 - SPD						1 2 4 1 2 2 3 1 4 Y 2 4 2 1 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1							
			Hexachloroethane	2.4E-006	-	3.1E-008	5.5E-006	Hexachioroethane	Kidney	1,2E+001	-	1.6E+001	2.8E+001		
			Arodor-1248	7.1E-007	-	1.30E-006	2.0E-006	Aroclor-1248	-	-	-	_	-		
			Aroclor-1254	2.0E-007	-	3.70E-007	5.7 E-007	Aroclor-1254	lmmune	3.6E-001	-	8.7 E -001	1.0E+000		
			(Total)	3.3E-006	-	4.8E-008	8.1E-008	(Tobal)	1.2E+001	-	1.7E+001	2.9E+001		
e a recursión de			· · · · · · · · · · · · · · · · · · ·	1	otal Risk Ac	ross[Media]		T	otal Hazard Index Ad	ross All Medi	a and All Expo	sure Routes	2.9E+001		
			Total Risk Across	All Media ar	d All Expos	ure Routes	8.1E-008	į							
							THE LOOK THE STANDARD	1			Total	[Kidney] Ht =	2.8E+001		
											Total (1	mmunej HI =	1.0E+000		

TABLE 10.4.RME RISK ASSESSMENT SUMMARY REASONABLE MAXIMUM EXPOSURE HORSESHOE ROAD COMPLEX SITE, SAYREVILLE, NEW JERSEY

Scenario Timeframe: Future Receptor Population: Construction Workers Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical		Carc	inogenic Risk	· ·	Chemical		Non-Carcinogenic Hazard Quotient					
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total		
Soil	Surface Soil	AOC 4 - ARC	THE REAL PROPERTY OF THE PROPE		1		The second secon						2.22		
			Aroclor-1248	3.0E-008		5.5E-008	8.5E-008	Aroclor-1248	_	-	_		-		
			Aroctor-1254	6.6E-008	_	1.2E-007	1.9E-007	Aroclor-1254	Immune	1.2E-001	-	2.2E-001	3.4E-001		
			Aroclor-1260	1.6E-008	-	2.9E-008	4.5E-008	Aroclor-1260	-		-	-	-		
			Antimony		-	-		Antimony	Whole body/blood	5.4E-002		7.2E-003	6.1E-002		
	-		Arsenic	6.9E-007	-	2.7E-007	9.8E-007	Arsenic	Skin	1.1E-001	-	4.3E-002	1.5E-001		
	<u> </u>		(Total)	8.0E-007	ļ	4.7E-007	1.3E-006		(Total)	2.8E-001		2.7E-001	5.5E-001		
Soil	Subsurface Soil	AOC 4 - ARC	(102)	0.02-007		4.12.00	1.52-00			2.02-001		2.7.5-001	J		
			· •		-	1							1		
			Aroclor-1248	5.1E-009	-	9.2E-009	1.4E-008	Aroclor-1248	-	-	-	-	-		
	1		Aroclor-1254	1.9E-009	-	3.4E-009	5.3E-009	Aroclor-1254	Immune	3.4E-003	_	6.3E-003	9.7E-003		
	1		Antimony	-	-	-	-	Antimony	Whole body/blood	6.3E-003	-	8.4E-004	7.1E-003		
			Arsenic	3.3E-007	-	1.3E-007	4.6E-007	Arsenic	Skin	5.2E-002	-	2.1E-002	7.3E-002		
			(Total)	3.4E-007	-	1.4E-007	4.8E-007	(Tota	0	6.2E-002		2.8E-002	9.0E-002		
Building	Building	AOC 4 - ARC			1										
Viaterials	Materials		Aroclor-1254	1.0E-008	-	1.8E-006	2.8E-006	Aroctor-1254	Immune	1.8E+000	-	3.4E+000	5.2E+000		
			2,3,7,8-TCDD equiv.	4.3E-005	-	1.7E-005	6.0E-005	2,3,7,8-TCDD equiv.	_	-	-	-			
			Antimony		_	-	_	Antimony	Whole body/blood	9.5E+001	-	1.3E+001	1.1E+002		
			Arsenic	6.5E-006	-	2.5E-006	9.0E-006	Arsenic	Skin	1.0E+000	-	4.1E-001	1.4E+000		
			(Total)	5.1E-005	†···-	4.3E-008	7.2E-005		(Total)	9.8E+001	-	1.7E+001	1.1E+002		
vitte t seems	2 . 			117 70 15071	Total Risk Ac	ross[Media]			otal Hazard Index Acr	oss All Medi	a and All Expo	sure Routes	1.2E+002		

Total [Skin] HI = 1.8E+000

Total [Whole Body/blood] HI = 1.1E+002

Total [Immune] HI = 5.5E+000

TABLE 10.4.CT RISK ASSESSMENT SUMMARY CENTRAL TENDENCY EXPOSURE HORSESHOE ROAD COMPLEX SITE, SAYREVILLE, NEW JERSEY

Scenario Timeframe: Future Receptor Population: Construction Workers Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical		Carci	inogenic Risi		Chemical		Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure		Primary	Ingestion	Inhalation	Dermal	Exposure	
							Routes Total		Target Organ				Routes Total	
Building	Building	AOC 4 - ARC												
Materials	Materials							Aroclor-1254	Immune	3.4E-001	-	6.3E-001	9.7E-001	
		Į į						2,3,7,8-TCDD equiv.	_	- 1	-	-	_	
l ·								Antimony	Whole body/blood	2.7E+001		3.8E+000	3.1E+001	
								Arsenic	Skin	6.2E-001	-	2.5E-001	8.7E-001	
									(Total)	2.8E+001		4.5E+000	3.2E+001	